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A Comparative Analysis of Rorschach Forms with Altered Stimulus Characteristics[1]

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The problem undertaken may be stated as follows: How is perceptual behavior altered when certain specified modifications are made in the color, shading, figure-ground, and form characteristics of the standard Rorschach blots? The specific modifications will be described in the following section, but the point now to be emphasized is that the study focuses upon the attempt to clarify further the role of the stimulus in determining the Rorschach response. The need for such clarification of the stimulus has been clearly stated in an article by Zubin (12) and in research reported by Allen (1) and Siipola (11).

Method

Stimulus Materials.

Four experimental series of designs were constructed in addition to the standard series of Rorschach blots. The ten forms in each of the modified series maintained a peripheral form, however, which was identical with its counterpart in the standard series. (Peripheral form is defined as that form produced by tracing with a stylus in such a way that the stylus is always in contact with the white ground and a shaded or colored area of the card.) Within this limitation of constant peripheral form, each series differed from every other series in terms of one or more of the following attributes: color, shading, figure-ground contrast, and internal form characteristics. The five series may be described as follows:

Series P (Peripheral Form Series). Series P was created by placing a sheet of transparent paper over each of the standard Rorschach figures and tracing in ink along each contour formed by the juxtaposition of white ground with shaded or colored areas. This simple line drawing was then photographed and the print was mounted on cardboard of a weight and size comparable to that of the standard Rorschach cards. It is to be noted that each card in Series P is a solid white except for the irregular thin line corresponding to the peripheral form of the standard Rorschach figures.

Series S (Silhouette Series). Series S was constructed by taking a standard series of Rorschach cards and covering all of the shaded and colored areas with a solid coat of black India ink. Photographing and mounting were then carried out as described under Series P. The result was a series of solid black designs without differential light values, maintaining the same form as Series P, but with a very marked figure-ground contrast.

Series I (Internal Form Series). Series I may be described as a complication of Series P in the sense that lines or forms were added to the peripheral forms of Series P. These added forms are called internal forms since they always occur within the figure part of the

[1] Based upon a dissertation submitted to the Department of Psychology of the University of Chicago in partial fulfillment of the Ph.D. degree requirements. The author wishes to express his appreciation to Professors D. W. Fiske, H. Bolgar, L. L. Thurstone, and R. Brener for their supervision of this research. The assistance of R. McFarland is also gratefully acknowledged.

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original Rorschach blot. Only those lines were added, however, which are created by sharp differentials of light values on the standard series or by the juxtaposition of shaded and colored areas. Thus, the outline of the frequently seen human figure was added on Card 1.

Series A (Achromatic Series). Series A was constructed by photographing the standard series in black and white on panchromatic film. Thus, color was eliminated but differential light values were maintained as closely as possible to those found in the standard series.

Series C (Chromatic Series). This is the standard series of Rorschach blots.

An overview of the five series may be achieved by beginning with Series C, the most complex. It contains not only color and shading but also a complexity of form due to internal highlights and contrasts. Series A maintains the same complexity of form and shading but eliminates color. Series I maintains complexity of form but eliminates both color and shading. Series S eliminates complexity of form, differential shading, and color but gives the subject stimuli with accentuated figure-ground contrast with which to work. Series P eliminates all of the above characteristics and presents only a simple line figure. By varying these major characteristics of the stimuli it was believed that it would be possible to evaluate the effects of color, shading, figure-ground contrast, and internal form characteristics upon the perceptual behavior of a group of subjects. An example of the experimental modifications as applied to Card II may be seen in Figure 1.

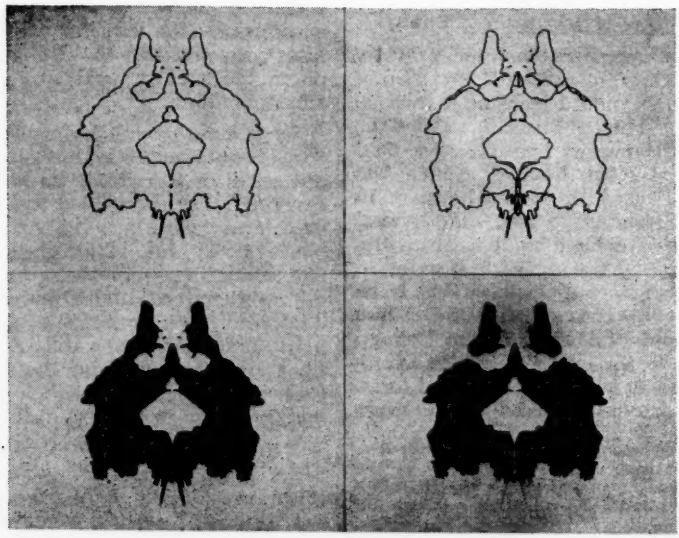

FIGURE 1—Series P, I, S, and A modifications of Card 2, reading left to right, top to bottom.

Series A was actually a lighter and more differentiated grey than this miniature reproduction suggests.

Experimental Design, Subjects, and Testing Procedure.

One hundred subjects participated in the experiment, 20 being randomly assigned to each of the 5 series. All subjects were hospitalized neurotic male veterans. Diagnosis was made independently of the present study by the psychiatric staff. Neurotics were chosen as the study population because Rorschach literature has consistently indicated that these are the individuals who are most strongly affected by color and shading. Identification of color and shading effects should be most apparent in such a group.[2]

Each subject was evaluated in terms of intellectual and educational level. Analysis of variance revealed no significant group differences in respect to these variables. A summary picture of the "typical" subject in this study would run somewhat as follows: a white male veteran, emotionally disturbed but not psychotic, of above average intelligence (Mean I. Q. = 113.5), approaching his thirty-first birthday (Mean Age = 30.5 years), the possessor of 10.5 years of formal education, and coming from one of the lower socio-economic levels.

All subjects were evaluated by the psychiatric staff prior to referral to the writer. Subjects were tested as part of their hospital study and did not know that they were also participating in a research project. All testing was done by the writer. Subjects who had taken the Rorschach test on any prior occasion were eliminated from the study.

After a brief initial interview with the subject (designed to obtain information regarding his educational background, age, occupation, socio-economic level, and related data), the VIBS (8) was administered in order to assess his intellectual level. Administration of one of the Rorschach series followed, administrative procedure conforming to that suggested by Beck (4), with the following exceptions: (a) identical instructions were given to each subject; (b) no encouragement was given after completion of Card II; and (c) the word "designs" was substituted for the words "ink blots" in the instructions. In addition the subject was asked to rank order the ten cards in order of "liking" or preference after the inquiry had been completed. Upon completion of testing, subjects in Group C were examined for color blindness; no subject was found deficient in this respect.

Scoring of Protocols and Treatment of Data.

Beck's (4) scoring procedure was utilized to evaluate and summarize each of the protocols, except for the addition of Klopfer's (7) FM, m, and F% categories. All scoring was carried out by the writer, whose ability to score in a standardized manner had been demonstrated by a prior study (2).

Analysis of the data was carried out in terms of two major dimensions: (a) group comparisons in regard to primary scoring categories; and (b) comparative card analyses in terms of the differential response

[2] Specific symptoms and psychiatric diagnoses were tabulated for each subject in each group. No systematic differences between groups were detected by this procedure, but the unreliability of such procedure is recognized. This is especially true since the total size of the sample necessitated participation by several psychiatrists with somewhat different theoretical orientations. Our method did insure, however, a strict random assignment from within a clearly defined neurotic population and hence should minimize any possible bias due to selective assignment of specific diagnostic categories.

to each card in each of the five series. The group analysis involved the following steps:

1. Computation for each subject of a total score for each of the categories listed in Table I.

2. Pooling of the total 100 scores for each category and determination of a cutting point for each category at or as close to the median value as possible.

3. Determining, for each group, the numbers of subjects falling above and below the cutting point for each category.

4. Comparing each group with every other group in terms of each of the scoring categories in order to determine significant differences. The test of significance utilized was the Fisher-Yates exact method (5).

Tests of significance were first run on the basis of raw scores. Then, where applicable, each raw score for each individual was converted into a percentage score based upon his total number of responses. This was done in order to take into account effects of different productivity levels (6). Tests of significance were then run in a manner similar to that described for raw scores.

In addition an analysis of time and response patterns was carried out. This was done by giving time and response data to three experienced Rorschach workers for each of the 100 subjects and asking them to independently judge which patterns were indicative of color and/or shading shock. The judges did not know, of course, to which groups the subject belonged.[3] For each subject the judge received the following information: time per first response for each card, total time devoted to each card, number of responses given to each card, average time per response, average time per first response, average time per first response for Cards I, IV, V, VI, and VII, average time per first response for Cards II, III, VIII, IX, and X, and total time devoted to the test.

The analysis of card data may be divided conveniently into two parts: (a) comparison of each card with its counterpart in each of the other four series to determine significant differences in productivity (R), time per first response to card (T/1R), total time devoted to card (Total Time), and preference rating (Preference); and (b) frequency analyses concerned with changes in location, determinants, and content through the five series for each card. The Fisher-Yates exact method was utilized to determine significance levels for the first type of analysis, according to the methodology described above for the group data analysis.

Results I: Group Data

Table I presents a summary of the significant differences between groups according to scoring categories. No group differed significantly (.05 level) from any other group in respect to 21 of the 39 scoring categories; consequently these categories are not listed in the body of Table I. Entries in this table are based upon percentage scores, except for categories R and F+ which are based upon raw scores. Table II presents median raw scores for each group for each scoring category in order that trends in data may be noted where differences have not reached a significant level. Results will now be summarized following customary Rorschach groupings.

[3] The author wishes to thank Drs. M. E. Grier, R. W. Pugh, and D. Grauer for their assistance in this analysis.

TABLE I—Groups Differing Significantly According to Scoring Category

Scoring Category	Level .01	Level .05	Scoring Category	Level .01	Level .05
R		C-P	F+		I-P
D%		C-P, A-P I-P, S-P S-C, S-A	S%	P-C, P-A P-S, I-S	I-C, I-A
(H+Hd)%		S-C, S-A	M%		S-P, I-C I-A
C%		C-A, C-I C-S, C-P	Aobj %		C-I
CF%	C-A, C-I C-S, C-P		An %	C-I	
FC%	C-A, C-I C-S, C-P		X-Ray %	C-I, C-P	C-S, A-I A-P
YF%	C-I, C-P A-I, A-P		(Ge+Ls)%		I-S, P-C P-A, P-I P-S
FY%	C-I, C-S C-P, A-I A-S, A-P S-I		Ink %	C-P	C-I, A-P
FV%	A-I, A-S A-P	A-C	F %	I-C, I-A I-S, P-C P-A, P-S	

Note:—Scoring categories for which none of the differences reached the .05 level are not listed in the table. These categories are: W%, Dd%, FM%, m%, Y%, VF%, TF%, FT%, F+%, F—, P%, T/1R, T/R, T/1R for Cards 2, 3, 8, 9, and 10, T/1R for Cards 1, 4, 5, 6, and 7, Total time, (A+Ad) %, Sex %, Bt %, Total Number Content Categories, and VIII — X/R%. Scoring categories are more completely identified in text.

The first letter in each table entry indicates which of the two groups exceeded the other in respect to the particular scoring category. For example, Group C exceeded Group P in terms of R.

Productivity

Series P evoked the fewest number of responses (R) while Series C stimulated the greatest productivity. High productivity on Series C is the reverse of what might be anticipated on the basis of color-shock theory in relation to neurosis (3). Although Group P was least productive, an interesting fact is to be noted if the raw score distributions are studied, namely that as high productivity occurs on Series P as on the other series. Thus, the three top individuals in Group P scored 77, 59 and 41 compared to 81, 57 and 43 in Group C; 44, 42 and 42 in Group A; 78, 58 and 56 in Group I; and 60, 40 and 41 in Group S. The fact that the remaining subjects of Group P dropped off markedly in productivity, however, produced a change in the shape of the distribution compared to the other groups. Apparently those individuals who have a strong need to be productive will be so even though given comparatively little to work with. The distribution of scores for Group A suggests that the continued presentation of massive grays may dampen responsiveness for some subjects. Comparison of Group S in turn with Group P suggests that a definite figure-ground relationship enhances productivity even though the geometrical forms being worked with in the two series are

TABLE II—Median Raw Scores for Each Group for Each Scoring Category

Group	Scoring Categories							
	R	W	D	Dd	FM	m	M	C
Chr.	24.5	6.8	18.0	0.4	3.8	0.5	1.1	0.2
Achr.	20.5	5.5	13.5	1.3	3.1	0.4	1.8	0.0
I-Form	22.5	4.8	14.5	1.5	2.9	0.4	2.8	0.0
Silh.	21.5	6.8	13.2	1.0	2.4	0.1	5.3	0.0
P-Form	14.5	6.0	6.8	0.4	2.0	0.1	0.8	0.0
	CF	FC	Y	YF	FY	VF	FV	TF
Chr.	0.5	1.1	0.1	0.3	1.5	0.0	0.1	0.0
Achr.	0.0	0.0	0.1	0.3	1.5	0.1	0.4	0.1
I-Form	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Silh.	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.0
P-Form	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
	FT	F+	F+%	F−	P	S	T/1R	T/R
Chr.	0.0	14.5	76.5	3.1	6.8	1.4	23.7	48.1
Achr.	0.1	13.5	79.8	3.8	5.1	0.5	21.9	46.3
I-Form	0.0	15.5	80.0	4.2	5.8	4.0	32.6	57.5
Silh.	0.0	11.5	71.3	4.2	6.8	0.7	25.0	49.7
P-Form	0.0	8.2	66.5	4.5	2.5	4.2	35.4	64.0

	T/1R (Cards 2,3,8,9,10)	T/1R (Cards 1,4,5,6,7)	Total Time	F%	VIII-X/R%	(H+Hd)	(A+Ad)	Aobj
Chr.	22.2	26.3	1092	68.5	34.2	2.5	11.0	0.9
Achr.	18.5	23.0	983	75.6	25.6	3.5	9.5	0.7
I-Form	36.6	30.7	1187	89.0	29.8	5.0	8.0	0.2
Silh.	23.5	25.3	1017	73.7	35.9	7.0	7.8	0.5
P-Form	39.6	27.3	981	93.3	29.2	1.5	5.2	0.6

	An	X-Ray	Sex	Bt	(Ge+Ls)	Ink	Total Content
Chr.	1.3	0.3	0.2	1.2	0.5	0.4	9.5
Achr.	0.3	0.2	0.1	0.8	1.5	0.2	9.5
I-Form	0.3	0.0	0.0	1.4	1.8	0.1	9.5
Silh.	0.7	0.1	0.0	0.9	0.5	0.1	7.9
P-Form	0.4	0.0	0.0	0.5	2.5	0.0	7.5

NOTE: All time scores are given in seconds and tenths thereof.

identical. Consideration of Group I with Group P indicates that the productivity lost by the elimination of figure-ground contrast may be compensated for by the addition of discrete form areas.

Mental Approach

The stability of mental approach (W, D, Dd) in the face of pronounced assaults upon the stimulus figures is emphasized by the data. As long as basic form is held constant, the stability of one's approach to interpretation is undeniable. Only on Series P is a significant distortion of the approach of subjects produced by the alteration of stimulus attributes considered in this study. Subjects in this group produced conspicuously fewer responses to major part areas (D responses) than did subjects in the other groups. It is surprising to note, however, that subjects did not experience a similar difficulty in "breaking-up" the solid black forms (Series S). Despite the added unity given to these figures by making them one uniform "color," subjects were able to produce only the usual number of whole responses, and they maintained a comparable productivity level by breaking up the blots to produce major detail responses. Subjects in Group P, in contrast, produced a comparable

number of whole responses, but did not then proceed to break-up the stimuli for major detail responses. It should also be noted that there was a tendency for subjects in Group I to produce fewer whole responses, although no significant decrement was obtained. The added prominence given to certain detail areas in this series probably made it difficult for some subjects to free themselves from the dominance of particular detail responses and go on to an integrated whole response.

Determinants

Movement (M, FM, m). The most striking result involves the marked increase in the number of human movement responses (M) given to Series S. Seventeen of the twenty subjects in this group gave at least three M responses. The fact that this series was more "alive" than the standard Rorschach became apparent early in the testing. In contrast, Series P, which differed from Series S in figure-ground characteristics, was least productive of M responses.

Color (C, CF, FC). Since color responses are possible only to Series C, one would anticipate that the remaining groups would differ significantly from Group C but not among themselves, as shown by Table I.

Shading (Y, YF, FY). Nine of the eleven significant differences involve either Series P or Series I in which no differential light values are present. A rather unexpected finding, however, is the fact that Groups A and C do not differ significantly in frequency of shading responses, since Series A seems to present considerably more opportunity for such responses to develop than does Series C.

Vista (VF, FV). The only three VF responses obtained occurred on Series A. Consistent with this trend is the fact that Group A differed significantly from every other group with respect to FV responses. The factor of increased opportunity referred to under *Shading* above may be apropos here as an explanation of these differences. In comparing Groups C and A, however, the problem arises as to why such differences are found in relation to vista responses but not in regard to shading responses. The data indicates that if the color impact affects the psychological processes underlying vista responses, the effect is one of suppressing their manifestation, or shifting their manifestation to other forms. The data does not point to a similar conclusion for shading responses. It is apparent that the present study does not adequately resolve these problems.

Texture (TF, FT). Such responses are too infrequent to be handled adequately in groups composed of twenty subjects.

Form Accuracy (F+, F−, F+%). The absolute number of F+ and F− responses is probably less important than the relationship between the two, which is reflected in the F+%. When F+% is considered it is found that the distributions are almost identical for Groups C, A, and I, thus emphasizing the independence of form accuracy from color and shading effects. The drop in form accuracy on Series S and P does not quite reach statistical significance except when Series I and P are compared. Series S and P are the two series which present the subject with fewer discrete form areas to interpret. The press for productivity provided by the structuring of the test situation, however, is not lessened. One may infer, therefore, that productivity may be achieved through

a lowering of the standards which the subject imposes upon the accuracy of his response; rather than not produce, most subjects may settle for somewhat poorer responses. This inference can, of course, be rather easily checked by experimentally manipulating the press for productivity.

Content

Humans (H + Hd). Both Groups S and I produced an abundance of human percepts. In Group S all but one of the subjects gave at least three responses with human content, whereas in Group C only three subjects gave three or more such responses. The modifications made in the stimulus cards were of such a nature as to give added demand value in Series S and I to areas which are commonly interpreted as human in content. The fact that Series P evoked no such increase should make one cautious in inferring a direct influence of color or shading in producing these data. This follows since one would predict that if color and shading acted directly to set off affective reactions leading to a depression in the number of human responses, then a significant increment in such responses would be found when these two attributes are eliminated, as on Series P.

Animals (A + Ad). The groups did not differ significantly in terms of animal content when productivity level was taken into account. If animal content is interpreted as a reflection of stereotypy of thought (3) then it is clear that the stimulus characteristics under question have no marked influence upon such stereotypy.

Animal Objects (Aobj). The usual animal objects (pelts, rugs, etc.) were less frequent only on Series I. The equal number of such responses given to Series S and P is most surprising since a shading determinant is frequently held to be essential. Series I and P differed in the production of these responses because of the addition of discrete forms to the center portions of Cards IV and VI. The addition of these forms made it more difficult for subjects to integrate the total blot and produce a skin or rug percept.

Anatomy (An). Anatomical responses occurred more frequently in response to Series C. Since many such responses involve a color determinant this finding would appear to be predictable. An alternative hypothesis is possible, however, namely that color stimulates an affective reaction of such a nature as to lead to greater bodily preoccupation.

X-Ray. Groups C and A differed significantly from every other group in respect to X-Ray responses. The necessity (in most cases) of having shading differentials present in order to form such percepts apparently accounts for these results. It is interesting to note, however, that each series provoked at least one X-Ray response, despite the absence of shading differentials in Series I, S, and P.

Sex and Botany (Bt). No significant group differences were obtained.

Geography and Landscape (Ge+ Ls). The high frequency of Ge and Ls percepts in Series P appeared to be related to the difficulty felt by many subjects in interpreting this series; yet rather than give no response they would often-times indicate a vague type of island or map percept. Thus these responses were frequently a reflection of poverty in associational content, responses given when nothing more adequate could be produced.

Ink. It will be recalled that in the instructions no mention of ink or ink blots was made to the subjects. Yet in the free associations at least one such response was given by one or more subjects of each group. As expected, however, such content was more frequent on Series C and A.

Total Number of Content Categories. No significant differences between the groups occurred in terms of the number of content categories that the associations fell into. The trends parallel the findings for (A+Ad) noted above and support those findings regarding stereotypy of thought as related to stimulus attributes.

T/1R, T/1R (Cards II, III, VIII, IX, X), T/1R (Cards I, IV, V, VI, VII), Total Time, and T/R. Although the groups do not differ significantly, the trend is for responses to be produced more slowly when figure-ground contrast is eliminated (Series I and P). No blocking effect due to color or shading is indicated.

Time and Response Patterns. As indicated in the section on *Method,* three experienced Rorschach interpreters were asked to consider the time and response patterns for each subject and to judge whether the patterns conformed to what is typically called "color-shock" and/or "gray-black shock." The number of positive judgments made by each judge for each series was then tabulated and the significance of differences between groups was determined by the exact method. Out of sixty possible comparisons (each judge for each group against every other group) only two significant differences were obtained: one judge found "color-shock" patterns more frequently on Series P than on Series C or A.

Other Scores

Popular (P). Although data regarding popular responses are presented in Tables I and II, in actuality no satisfactory analysis of the psychological processes underlying P appears possible for the present study. To deal with numerical totals of P, when the responses to be called P have been determined empirically by reactions to Series C only, is misleading. Thus the response "map" is more frequent on

TABLE III—Significant Differences Between Series According to Scores for Individual Cards

Card Number	Scoring Categories: R .01	R .05	T/1R .01	T/1R .05	Total Time .01	Total Time .05	Preference .01	Preference .05
I	C-P, A-P I-P, S-P		I-P		S-A		I-A, I-S I-P	I-C
II	C-S		I-S, P-S					
III								
IV		A-P, I-P						
V			I-C, P-C	P-A, P-S			I-C, S-C	A-C
VI	C-P, A-P	I-P, S-P						
VII	C-P, A-P			P-A		C-P		
VIII			I-C, P-C P-A	I-A, P-S				C-A, C-I
IX	C-P	A-P, S-P	P-C, P-S	P-A				
X		C-P, S-P						

NOTE: The first letter in each entry indicates which of the two groups exceeded the other group in respect to the particular scoring category. For example, Group C exceeded Group P in productivity (R) on Card I at the .01 level of significance.

Series I and P for Card I than the response "bat," yet "bat" is P and "map" is not.

White Space (S). Responses to areas called *S* on Series C were also scored *S* if they occurred on the other four series. As expected, such responses were most frequent in Groups P and I. With no brightness contrast existing between intended figure and ground, the restructuring of figure-ground relationships becomes much easier for the subject.

VIII - X/R %. No significant differences between the groups were found.

F%. Groups P and I give comparatively more form-determined responses than do the remaining groups. This is understandable since they are given no opportunity to respond to shading or color attributes. Group S is comparable to Groups C and A because of its many M responses, as noted above.

Results II: Card Data

Table III presents a summary of differences in R, T/1R, Total Time, and Preference (according to each card) which were great enough to reach either the .05 or .01 level of significance. In addition each card was analyzed in terms of alterations of response to discrete areas of the card in its five modifications. Most of the latter data is too detailed for presentation here; the interested reader is referred to the original dissertation. Some of the more interesting findings of this analysis for each card will now be listed, however.

1. The bat response to Card I occurred only once on the two series which did not have either a gray or black figure. Thus the importance of a determinant other than form is indicated, even though few subjects verbalize anything other than form or movement. Witches were also seen on Card I only when the form was black or gray.

2. Response to the colored areas of Card II was slightly more frequent on Series C. Despite the prevalence of blood percepts on Series C, however, the preference level for the card did not drop significantly in that series.

3. The perceptual handling of Card III was remarkably constant throughout the modifications and no systematic effects could be uncovered.

4. When Card IV contained shading differentials (Series C and A) an animal form dominated the W responses; when shading was eliminated, however, human forms dominated the content. It was also found that skin percepts were given to each of the modified blots.

5. The bat was given less frequently on Card V when blackness or grayness was eliminated, thus supporting the findings relevant to Card I. The differences were less pronounced, however, suggesting that the form itself is easier to reconcile with that of a bat proper than is the case with Card I.

6. W skin or rug percepts on Card VI were produced with equal frequencies on all series except I, thus emphasizing the dominance of form as a determinant. The decreased frequency on Series I is brought about by the accentuation of inner D areas, a fact which makes perception of a skin form for the whole a more difficult task. Card VI was also rejected more frequently on Series I and P, i.e., when figure-ground contrast was eliminated.

7. Cloud percepts were given for Card VII only on Series C and A. It is also of interest that figure-ground reversals did *not* occur more frequently on Series I and P,

although such an increase was found for the central white area of Card II.

8. Except for the increased preference for Card VIII when it is colored, the effect of color and shading upon the perceptual handling of the card is quite minimal.

9. Negative effects due to color could not be demonstrated on Card IX. Among other findings, the number of rejections of the modified cards was of the same magnitude as for the colored stimulus.

10. The number of W interpretations of Card X is not significantly affected by color, shading, or figure-ground attributes. As was true for Card IX, negative effects due to color could not be demonstrated.

DISCUSSION

The data are clear and impressive in their demonstration that the major dimensions of perceptual behavior in the Rorschach task remain remarkably constant even though marked alterations are made in the stimulus attributes. In twenty-one of the thirty-nine scoring categories no group differences occurred at or above the .05 level of significance. Moreover, all of the differences in Table I which are significant at the .01 level can be explained on the basis of diminished availability of a particular stimulus attribute in one of the series being compared. Thus, all of the significant differences involving scoring categories C, CF, and FC can be understood in terms of the fact that only one out of the five groups is given the opportunity to respond to color. In a similar fashion, one would expect Groups I and P to exceed the remaining groups in F%, since individuals in Groups I and P are given no opportunity to respond to shading. Comparable arguments can be made for the other differences at the .01 level of significance, as well as for many at the .05 level. Dimensions commonly referred to as productiveness, mental approach, accuracy of perception, reaction time, time of involvement in task, diversity of associational content, and productiveness during final portions of task are minimally affected by alterations in the stimulus attributes under consideration. The conclusion which appears to be justified by these findings is that the basic form of the blots is of overwhelming importance in determining perceptual behavior, to the extent that such behavior is determined by properties of the stimulus rather than processes within the perceiver functioning relatively independently of the stimulus situation.

The data are also clear in their implications regarding the effects of figure-ground organization upon perceptual behavior. The effects of varying this stimulus attribute appeared to be considerably more far reaching than did variation of color and shading. Of primary interest is the fact that accentuation of figure-ground contrast led to a very significant increase in human movement responses. This finding would seem to refute the suggestion made by Zubin (13) that movement responses will be more frequent in response to chiaroscuro blots than to contour blots. A report of research now nearly complete will further clarify this problem of the relationship between perceived movement and figure-ground contrast.

It is worth noting here, however, that the findings in the present study were not identical for animal and human movement. The writer has often wondered whether or not the psychological process (or pro-

cesses) underlying these two types of responses were not essentially the same, despite theoretical argument to the contrary. The fact that FM is independent of all the modifications made in the present study but M is definitely not independent of them, suggests the lack of identity in the underlying processes.

The constancy of perception throughout these series stresses another fact which has been brought out by several pieces of recent research, namely that the generalizing or dynamic effects of color upon total perceptual behavior appears to be considerably less than Rorschach theory has postulated.[4] The present data also indicate that one is justified in drawing the same conclusion regarding the dynamic or generalizing effects of shading. In reference to color, support is thus offered for Lazarus' (9) findings. Actually the present research is rather crucial in this respect since it is fair to state that Lazarus was not justified in drawing his conclusions regarding color effects because of both the subjects and method which he used. The use of normals and group administration (thus eliminating such measures as time scores) provided him with a critical test *only* if he secured positive results, which of course he did not. The present research, however, which has attempted to correct these two points of criticism, indicates the correctness of his conclusions even though criticism of his method can be made. It then goes one step further in arguing for a comparable conclusion regarding shading effects.

The data resulting from the card analysis, however, suggests that part of the overall constancy, as represented by psychogram scores, can be attributed to what might be called compensatory deviations within each series. By this is meant the fact that a deviation in one direction for a particular score on a particular card may be balanced by a deviation in the opposite direction for the same scoring category on a different card within the same series. For example, productivity was significantly decreased on Card II of Series S as compared to Series C, but there were sufficient increases in productivity on some of the remaining cards of Series S so that no overall differences in productivity eventuated between Series S and C. This may reflect a "total productivity set," as suggested by Fiske and Baughman (6) in a previous paper. Although the card data draw this fact to our attention, they do not negate our previous statement. One may in fact argue that the group data are a more reliable basis on which to draw conclusions regarding the effects of the stimulus attributes being considered since dependence upon a single form structure is eliminated.

Card data also support the group data in pointing to the fundamental importance of form and figure-ground contrast as being the two dimensions of the stimulus which most affect perception (40 of the 45 significant differences in Table III involve either Series I or P.) By

[4] It must be clearly understood that the interpretation of "constancy of perception" as suggested here is dependent upon the assumption that the groups did not differ in personality characteristics in such a way as to introduce systematic bias. That the random assignment of subjects successfully equated the groups with respect to such variables as intelligence, education, and age has been demonstrated quantitatively, but the equation in terms of other factors rests upon a qualitative examination of symptoms and diagnoses as indicated in the section on Method.

contrast the effects of color and shading appear to be quite minimal (only 1 significant difference in Table III when Series A and S are compared; two significant differences when Series C and A are compared). When effects of color and shading are noted, the effect is usually in terms of content (e.g., blood instead of heads on D2 of Card II). The importance of figure-ground contrast had been suggested earlier by Sappenfield and Buker (10) as one possible explanation of their findings in regard to the 8-9-10 per cent. Our results point in a similar direction and suggest the need for a more systematic investigation of the relationship between contrast and perception.

As the data were examined pertaining to each card in its variations, it became clear that certain stimulus attributes were necessary for the formation of particular percepts even though the subject had not indicated awareness of such determinants (e.g., only one subject in Groups I and P gave a bat response to Card 1 whereas 22 subjects in Groups C, A, and S produced a bat percept). This, of course, is not a startling result since Rorschach workers have long been aware of the difficulties posed by the necessity of depending upon the verbal report of the subject in order to carry out an inquiry. Experience gained in carrying out the present study suggests that a considerable part of this difficulty would be overcome by proper use of our experimental materials. Moreover these materials provide a methodology whereby one should be able to differentiate those individuals who are aware of the external determinants of their perceptual behavior from those who are unaware of the correct determinants.

Changes in procedure of inquiry may be particularly desirable in research studies which place heavy emphasis upon the interpretation of determinant scores. By proper selection of one or more of the experimental forms of each card to be presented to the subject during the inquiry (or following a regular inquiry) it should be possible to determine the primary and secondary determinants of each response with considerably more precision than one can do at the present time. If such a procedure were carried out following completion of a standard inquiry, one would then have data which would permit assessment of the extent to which the subject has been aware of the determinants of his behavior.

Many of the measures that we make of the perceptual behavior in the Rorschach test appear to be primarily dependent upon processes inherent in the perceiver (to use Zubin's (12) term) rather than upon properties of the stimulus. Time patterns, productivity, and associational breadth would be examples of such measures. The stimulus properties limit perceptual behavior, of course, but only in a very broad sense. These limitations in turn should be thought of primarily in terms of form and figure-ground characteristics.

The fact that perceptual behavior is so minimally affected by major changes in stimulus characteristics should make us feel more secure in our use of such techniques for personality evaluation. The fact that we affect behavior so little by such changes in external conditions points up the extent to which such behavior is determined by personal characteristics of the individual, a not unhappy finding. Our need now is to pursue more clearly the formulation of these internal or personal determinants.

Summary

This study was designed to analyze the role of stimulus attributes in determining the Rorschach response. In addition to the standard Rorschach series, four experimental series of cards were constructed which were identical to the original series in regard to peripheral form but which varied in terms of color, shading, internal form, and figure-ground characteristics. Each of the five series was administered to a different group of twenty neurotic male veterans, the groups being equated for intelligence, educational background, and age. The groups were then compared as to scores on thirty-nine Rorschach categories and comparative analyses of each card were carried out. In addition clinical judgments of time and response patterns were analyzed. On the basis of these data the following conclusions were drawn:

1. Despite marked differences in stimulus attributes, similar perceptual behavior is elicited.

2. The dynamic or generalizing effects of color and shading upon total perceptual behavior are not as extensive as Rorschach theory has postulated.

3. Constancy in psychogram scores for the five series is due in part to compensatory trends occurring within each series.

4. The importance of the geometrical form and the figure-ground dimensions of the stimuli in determining perceptual behavior is emphasized.

5. The importance of psychological processes inherent in the perceiver in determining perceptual behavior is pointed out.

6. The dependence of the formation of certain percepts upon particular stimulus attributes is indicated, as well as the inability of many subjects to report the influence of the pertinent attribute.

Suggestions regarding a change in the method of conducting the Rorschach inquiry are also made.

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Regarding "The Two Tests in the Rorschach" by Levin

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Levin (4) has called Rorschach workers to task for not giving sufficient attention to the pitfalls involved in reliance upon introspective report during the inquiry. Although the editors properly question Levin's use of the term "introspection" (we would suggest that "retrospective analysis" is a more precise description), his point is clearly made and worthy of further consideration. Klopfer (3) correctly points out that Levin does not appear to offer a solution to the dilemma that he poses, despite the importance of the problem. In this paper we will attempt to enlarge upon the comments offered by Klopfer (3) and Beck (2), and propose procedures which it is believed will contribute toward the resolution of the problem presented by Levin.

It is not our belief that those working with the Rorschach have been unaware of the limitations associated with the inquiry method; however, it is true that minimal *public* attention has been devoted to it, as Levin suggests. It is as if we have tacitly agreed that nothing much could be done about an admittedly imperfect method without destroying the essence of the Rorschach procedure. The solution, then, like the solution to many perplexing problems, has been to push the problem to that vague periphery of awareness where it remains imperfectly encapsulated and inadequately resolved.

In the above connection it is interesting to note that neither Klopfer nor Beck (in their comments on Levin's article) consider the possibility of whether it might be possible to modify the inquiry procedure in such a way that some of the objections currently being raised against it can be removed. We believe this to be not only possible, but that it can be done in such a way that the overall sensitivity of the Rorschach technique is increased. To do so, however, will mean wrestling with deep currents of tradition that will not easily bend. Nevertheless, the potential benefits would appear to be of an order to justify the attempt.

In an article that was in press when Levin's paper appeared, we presented results of a study involving four experimental series of Rorschach blots in addition to the standard series. The four experimental series differed from the standard series by systematic variation of color, shading, figure-ground, and internal form attributes. Thus Series A consisted of stimulus figures in which chromatic color was eliminated but brightness differentials were maintained. In Series S, shading differentials were eliminated so that solid silhouettes resulted. In Series I the solid figure-ground contrast was removed and the stimulus figures involved only line constructions corresponding to the forms of the original blots. The outlines of internal forms (e.g., the human figure on Card I) were added, however, to the peripheral forms. In Series P these internal forms were eliminated and the stimuli consisted of line drawings cor-

[1] The ideas developed in this article were formulated while the author was at the University of Wisconsin.

responding to the peripheral forms of the original blots. In discussing our results, we offered the following comments, which space did not permit us to elaborate upon:

> As the data were examined pertaining to each card in its variations, it became clear that certain stimulus attributes were necessary for the formation of particular percepts even though the subject had not indicated awareness of such determinants . . . Moreover these materials provide a methodology whereby one should be able to differentiate those individuals who are aware of the external determinants of their perceptual behavior from those who are unaware of the correct determinants . . . Changes in procedure of inquiry may be particularly desirable in research studies which place heavy emphasis upon the interpretation of determinant scores. By proper selection of one or more of the experimental forms to be presented to the subject during the inquiry (or following a regular inquiry) it should be possible to determine the primary and secondary determinants of each response with considerably more precision than one can do at the present time (1).

Here, then, is an admittedly hazy sketch of a suggested change in technique relevant to the problem under discussion; elaboration is in order.

Our first assumption is that most naive Ss do not *supress* communication of perceptual determinants in the inquiry since they are not aware of the significance to be attached to any one of them; whether the use of a particular determinant is "good" or "bad" is beyond their capacity to determine. To analyze the *external* determinants of their percept is moreover a new experience for them, and a difficult task even for the trained retrospectionist. Yet Ss do differ remarkably in their sensitivity to the determinants of their behavior, including the external determinants of their perceptual behavior. In most Rorschach examinations the inquiry, as now conducted, gives E an indication of the external determinants of S's perceptual behavior that S is consciously aware of. The value of this information is not to be underestimated, but its value would be increased if E were able to determine further determinants that S originally indicated no awareness of. A clear example of this is the "bat" response to Card I. Most Ss indicate a simple form determinant for this response, but a few Ss point to both a form and "blackness" factor. When we remove "blackness" from the stimulus (as in Series I and P referred to above) the bat percept becomes quite rare, suggesting that a determinant other than form is operating even for those Ss unable to verbalize it. We would argue that there is an important difference between the S who is sensitively aware of his percept determinants and the S who is not. An analogy may be drawn here to the S who in the course of therapy gradually increases his awareness of the determinants of his behavior.

Three alternate methods of utilizing our modified blots may be suggested. One possibility is to use them *after* the regular inquiry as now conducted. By this technique E first elicits the determinants for all responses—as S is aware of them. Then E returns to those responses that may involve additional determinants (or all of the responses if he so chooses) and by proper selection of a modified blot he probes more deeply into S. Thus, S may have indicated a "bow tie" for the center red on Card III with only form as a determinant. E would then select the achromatic reproduction of Card III and present it to S (either alone or simultaneously with the original card) and ask S to indicate in what way, if any, his percept is modified. In

this way E would secure a more complete picture of S's reaction to color and his method of handling it. Another illustration might be the skin response to Card IV in which S verbalizes only a form determinant. By then introducing the silhouette modification (in which shading differentials are eliminated) E would be more able to accurately appraise the meaning of shading for S.

It should be obvious that such a technique has definite advantages over the use of such questions as, "Suppose this were exactly the same shape as now, but gray or black; would you still think it is a butterfly?", which Levin refers to. Posing such a question to S demands that he form a visual image in which the given stimulus is modified and then compared to the given stimulus. Ss are known to differ markedly in their capacity for visual imagery, but even for the S rich in imagery this is not an easy task. In any given situation it is also true that E is usually at a loss to know whether he is dealing with an S who is rich in imagery or one who is merely acquiescing in what he believes E to want from him. In the technique that we have just proposed the image is created in standardized form for S.

A second possibility of utilizing modified blots would be to begin the inquiry period with them. E could first expose the original blot and then proceed to expose each of the modified blots until he was satisfied that all determinants had been uncovered. Or the original blot plus its modifications could be exposed simultaneously to S with the suggestion that we are interested in how his original perceptions are altered as he looks at the modified cards. The disadvantage of this second procedure compared to the first is that it would not permit accurate differentiation between those determinants that S is aware of and those that he is not aware of; however, it might prove to be less time consuming.

Zubin (in personal communication) has proposed a third way in which modified blots could be used to arrive at a more objective scoring. The essence of his suggestion is that each of the modified series be presented to groups of Ss in the usual manner. Tables would then be constructed showing the number of times each response occurred in each series and these tables would then be used as standards for scoring determinants. The essential, secondary, or insignificant role of each determinant for a specific response could be assessed by reference to the distribution of the response throughout the various series.

One question raised by Zubin's proposal is what to do about those responses occurring too infrequently to be listed in the tables? A possibility here would be to apply one of the first two methods we have suggested to the rare responses, utilizing the tables for those responses occurring with sufficient frequency to provide adequate distributions.

These are some of the more obvious ways in which modified blots might be used to reduce our reliance upon what Levin calls "introspective reports." Other alternatives may be proposed, and a choice in any specific instance may be dependent upon our particular purpose, e.g., clinical or research. Certainly in research studies we should not hedge in breaking with tradition or in adopting what may be more time consuming procedures, if greater precision and more penetrating analyses are a potential result. Such methodological innova-

tions may well help to remove some of the current inconsistencies surrounding the significance of determinant scores.

One final comment should be made regarding the modified blots that we have referred to. It is not our intent to infer that these are the only possible modifications that might be of use. Zubin (again in personal communication) has suggested, for example, that a chromatic series in which chiaroscuro was removed could be of considerable utility. The choice of blots and procedure should be worked out only after considerable discussion and investigation by those who know the Rorschach best; the purpose of this paper has been to suggest a direction of movement.

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The Reliability and Validity of Spontaneous Finger Paintings [1, 2]

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The literature dealing with painting, drawing and finger painting is extensive (1, 2, 3, 10, 21) and would suggest that the latter technique has not only aroused a long standing interest but that it has also enjoyed a wide application to the study of psychiatric disorders. The psychological evaluation of graphic art was probably the first established "projective" technique.

Test-retest situations may be undertaken with ease and each subject establishes his own "baseline" in such comparisons, facts which are among the excellent practical advantages that recommend this approach. The manner in which serial paintings alter with changes in the patient's behavior, particularly during therapy, offers an excellent record of the manifest changes in his clinical condition (1, 14, 19).

Though the majority of reported interpretative approaches to finger painting have been either subjective, qualitative or psychoanalytical, they have nonetheless served to suggest that this method of personality evaluation has validity. Several authors have attempted to validate their results by comparison with other test material (14, 18, 23) in particular, the Rorschach test, though there is reason to believe that the data from two different types of projective tests bear no necessary relationship (9).

If serial testing is to be a major role of finger painting, then the reliability of this method is of crucial importance. However, since no adequate numerical scoring system, suitable for experimentation, appears to have been developed, this problem has received only indirect attention. Attempts to formulate an objective numerical scoring system for finger painting have been scant and certainly, with regard to the present study, are not adequate or appropriate. The notable lack of agreement among authors as to what aspects of a painting should constitute the basis of interpretation and, more seriously, the disagreement as to the clinical significance of some of these characteristics have probably been serious drawbacks (10, 21) to the development of quantitative rating scales.

LITERATURE

A selected survey of the pertinent literature regarding energy expended, colors employed, content depicted and clarity of representation in painting and drawing is outlined to provide a rationale for the development of objective rating scales for finger painting. Several of the previous rating scales are also mentioned.

[1] Presented at the annual meeting of the Psychological Association of the Province of Quebec, Montreal, November, 1952.

[2] Much of this paper is the result of the close cooperation and clinical imagination of Dr. H. Lehmann, clinical director, Verdun Protestant Hospital. Miss M. Caton, O.T.R., director of occupational therapy, and Miss F. Fraser, R.N., have extended the services of the department of occupational therapy in addition to lending invaluable personal assistance. The kind cooperation and permission to publish of Dr. George E. Reed, medical superintendent, is also acknowledged.

Energy

Precker (21), reporting on the work of Alschuler and Hattwick, describes line and form as the best representative, in a painting, of energy expended. Lack of restraint, not only in the motion of the stroke (20) but in the size of the painting, may be considered as evidence of aggressiveness or motor-release (27). Pressure is a further indication of the subject's energy level (14, 21). Hetherington (13) has shown that normal subjects are remarkably constant in the area their drawings cover.

Color

The affective tone is known to vary among colors. This is well illustrated by the reviews of Precker (21) and Napoli (19). There is a general agreement that the use of reds and yellows is a more spontaneous form of expression (27) than the blues or greens, which are more representative of controlled behavior (14). Black and brown are more common to states of inhibition (7), repression (19) and possibly, regression (21).

Content

The literature dealing with the spontaneous artistic productions of psychotic subjects gives a profuse account of the longstanding interest in the unusual contents portrayed, the symbolisms, perservations and other expressions of pathological thought processes (1). Frequently, interpretations of the content are offered, many following an approach of symbol analysis. Anastasi and Foley (1) in reviewing the work of Mohr, note the change in content with advance of the clinical condition, the subject matter becoming progressively less comprehensible and more deviant from real topics. Conversely, with improvement there is a reorganization to the level of more common or usual subject matter (10). These authors, from their own investigations, show that significant differences exist in the content between normal and abnormal drawings (4, 5). Not only are productions of the psychotic apt to be fantastic, but of bewildered purposelessness (12) and often with a mixture of mediums, such as a combination of writing and drawing (4). Aslow and Kadis (6) state that the correlation between the observable content of the painting and the patient's fantasy story about it is an almost infallible index of the degree of ego development.

Clarity

Most studies of the content of paintings also describe the variations in clarity of the subject's product. Napoli (19) points out that the lack of proper order and perspective in the drawings of those with mental disorder reflects an emotional and intellectual disorganization and a disorientation from reality. Form offers an indication of the degree of control being exercised (21) and the manner in which space is depicted alters with the maturational level (10).

Previous Rating Scales

Some of the suggestions offered by Cain (8) for the measurement of accuracy in drawing might be suitable for adaptation to the measurement of finger paintings. Schube and Cowell (25) have proposed a "restraint-activity index," a rating scale for paintings of what seems equivalent to energy output. Schmidl-Waehner (24) has measured the size of children's drawings and reports on the frequency of occurrence in normal, delinquent, psychotic and feebleminded chil-

dren of various sizes, formats, and colors, etc. These are the only quantitative approaches to fingerpaintings in the literature of which the author is aware. Several proposals for the objective evaluation of finger paintings appear suitable, however, for conversion into numerical rating scales. Billig[3] offers a very neat method of analysis by considering readily definable phases of "regression in space, regression in color and regression in movement," and Nagler[4] deals with the structural aspects of color, form and expressive content. The approach of Lehmann,[5] however, appears to hold the most promise in that it is more complete and its factors are more readily definable and applicable to any fingerpainting. Furthermore, it avoids the necessity of aesthetic judgments or a special psychodynamic orientation on the part of the examiner.

[3] Billig, O. Art in psychiatry : content and formalistic analysis. Scientific exhibit at the annual meeting of the Am. Psychiat. Assoc., Montreal, (May) 1949.

[4] Nagler, B. Evaluation of psychopathological art. Scientific exhibit at the annual meeting of the Am. Psychiat. Assoc., Cincinnati, (May) 1951.

[5] This objective method on which rating scales were later based (17) was presented in a scientific exhibit at the annual meeting of the Am. Psychiat. Assoc. in Montreal, (May) 1949: Lehmann, H. Free graphic expression as used in clinical follow-up studies of psychiatric patients receiving treatment. And also, as a filmstrip in "round table" discussion on, "Psychiatric aspects of artistic expression," at the subsequent annual meeting in Detroit, (May) 1950. To illustrate pictorially the four objective finger painting categories and the changes that may be observed in follow-up or serial evaluation, a technicolor filmstrip: "Clinical evaluation of fingerpainting in psychiatry," has been prepared by the National Film Board of Canada (1952) with the cooperation of Dr. H. Lehmann and Miss F. Fraser, R.N.

FINGER PAINTING RATING SCALES

Following Lehmann's method of objective rating, numerical rating scales were developed, each category being defined along a continuum from absence to excess. Both the category of "affective range," as judged by the colors used, and that of "contact with reality," as judged by the type of content, are inflexibly defined. The scales for the categories of "energy output," as judged by the number and pressure of strokes, number of details, motion of stroke, variation and size of painting, and "clarity," as judged by the accuracy of the design and composition, the distinctness of figure-ground, contrast and neatness, allow of some subjective variation among raters since the score is dependent on a descriptive appraisal. However, as only simple features need be appraised and pictorial norms have been established, the variance among raters is but slight.

The assignment of score value has not been purely arbitrary but is based on the consensus of findings reported in the literature so that the rating scales will yield scores consistent with the interpretative significance of the factors analyzed. Moreover, the descriptive categories of graphic expression are also significant for the description of a patient's behavior so that the results are directly meaningful clinically. The rating scales were developed in cooperation with Dr. Lehmann and by reference to a file of some 6000 finger paintings classified by diagnosis and with a clinical description of the patients available in most instances. These paintings were collected over a six year period, largely through serial studies of patients undergoing active treatment (psychotherapy, electrocon-

vulsive therapy, insulin coma therapy, bilateral frontal leukotomy, hydrotherapy, etc.).

Energy Output

Based on a judgment of the complex of size, motion and pressure of stroke, and extent of detail portrayed, it was possible to establish rating criteria for a scale of "energy output" from absence to excess as follows: Daubing, dotting, thin lines, using up to a quarter of the available space; ratings from 1-4. Coordinated and continuous strokes of normal pressure using at least half the available space and showing some variety of design; ratings from 5-8. Strong pressure, all or at least three quarters of the available space used, overlaying, scratching and tearing; ratings from 9-12. Pictorial norms have been selected and are used as points of reference, though unfortunately, it is not feasible to present them.

Affective Range

Red and yellow were classed as "spontaneous" colors, their use to have a score value of three each, blue and green were classed as "controlled" colors with a score value of two each, and black and brown as "sombre" colors, scored one each. Combination colors were scored dependent on their relation to this scale, thus orange, lime, and purple were scored three, two and one, respectively. The color rating is independent of the amount used. No attempt was made to consider in the rating scale, whatever personal value (14) a color might have for a subject.

Contact with Reality

With reference to the studies cited, the content categories were ranked on a scale from 0 to 12 according to their implied degree of realism. The categories and scores being as follows: no content attempted—0, indefinable—1, bizarre—2, unreal—3, meaningless repetition—4, lettering—5, symbolism—6, abstract design or conglomerations—7, landscape or scene—8, building or ship—9, people—10, creature or plant—11, and object—12. It is to be emphasized that *no* psychodynamic interpretation of the content was attempted.

Clarity

"Clarity" is based on the accuracy of the painting as reflected in such characteristics as neatness, contrast, extent of detail, and perspective, and rated on a scale from smearing to meticulousness as follows: Smearing and confusion, ratings from 0-3. Careless, 4; hazy, 5; poor, 6; fairly distinct to distinct, ratings from 7-9. Highly accurate to meticulous, ratings from 10-12. Here too, pictorial norms have been established to act as references for scoring.

These rating scales are so arranged that a score of eight represents approximately the optimal rating. In a series of paintings the patient sets his own baseline and acts as his own control, so that even if there is some difficulty in arriving at an absolute score in certain cases, there is almost never any problem to decide in which formal categories of the paintings a change has occurred and in which direction.

Population

The cases were carefully selected with regard to "typical clinical course" and "undisputed diagnosis" and were distributed as shown in Table I. Each group was about equally divided with regard to sex and fairly well matched for age with the exception of the groups of "organic brain lesion" and "chronic psychotic depression" which had higher mean ages than the six other

TABLE I—Measurements of Central Tendency and Reliability of Finger Painting

Diagnosis	Criteria	Energy Output		Affec. Range		Reality Cont.		Clarity	
		first	final	first	final	first	final	first	final
Non-Psychotic "Normals"	Mean	8.73	9.00	8.09	9.14	8.18	8.05	7.14	7.14
N = 22	S.D.	1.48	1.35	3.01	3.09	1.64	2.74	1.66	1.58
retest interv	t	1.08		1.74		0.23		0.00	
7.5 wks	test-retest r	+.679**		+.589**		+.357		+.313	
Organic Brain Les. (arrest)	Mean	4.60	4.40	4.93	4.13	4.93	5.13	4.53	4.53
N = 15	S.D.	1.58	1.82	2.82	2.13	3.33	3.30	2.53	2.03
retest interv	t	0.55		1.34		0.72		0.00	
10.1 wks	test-retest r	+.688**		+.622*		+.951**		+.849**	
Schizophrenia (chronic)	Mean	6.50	6.20	4.65	4.35	4.16	4.16	4.85	5.55
N = 20	S.D.	2.56	2.46	2.84	3.04	3.79	3.40	2.92	2.44
retest interv	t	0.84		0.77		0.00		1.89	
14.0 wks	test-retest r	+.804**		+.836**		+.924**		+.833**	
Schizophrenia (improved)	Mean	6.15	7.50	6.15	7.10	4.90	8.55	5.55	8.00
N = 20	S.D.	2.49	1.91	3.69	4.25	3.13	2.78	2.31	1.30
retest interv	t	1.94		0.89		3.95**		5.44**	
11.5 wks	test-retest r	+.068		+.317		+.073		−.255	
Psy. Depress. (chronic)	Mean	6.94	6.65	5.53	5.53	5.00	5.59	5.24	5.82
N = 17	S.D.	2.21	2.52	3.24	2.87	3.68	3.63	2.08	1.85
retest interv	t	1.27		0.00		1.42		1.59	
18.5 wks	test-retest r	+.934**		+.654**		+.897**		+.731**	
Psy. Depress. (recovered)	Mean	5.93	8.20	3.67	7.93	3.20	9.27	4.07	9.27
N = 15	S.D.	2.11	1.05	1.92	3.13	2.95	1.91	2.69	1.22
retest interv	t	5.33**		5.65**		8.71**		8.01**	
9.1 wks	test-retest r	+.681**		+.459		+.492		+.432	
Mania (chronic)	Mean	6.94	6.56	7.00	6.25	5.12	6.12	4.81	5.19
N = 16	S.D.	3.29	3.28	3.59	3.29	4.20	3.24	1.88	1.33
retest interv	t	1.10		1.48		1.06		0.99	
45.0 wks	test-retest r	+.917**		+.841**		+.517*		+.617*	
Mania (recovered)	Mean	8.06	8.50	8.00	8.94	6.31	8.25	4.38	6.56
N = 16	S.D.	1.80	1.70	3.30	2.82	3.98	2.46	2.12	1.50
retest interv	t	0.96		0.90		1.58		3.89**	
13.0 wks	test-retest r	+.486		+.126		−.032		+.018	

Levels of significance for differences between means (corrected for correlation) and for extent of correlation between first and final paintings: relative to number of degrees of freedom. ** very significant, P = .01; * significant, P = .05.

groups which were similar in this regard. All subjects were North American born and no subject was an artist. Education and socio-economic level could not be controlled but presumably varied randomly. The psychometric estimation of intelligence was considered to be of questionable validity for many of the cases and hence was not undertaken.

For each subject a series of not less than four finger paintings was available, in the majority of cases twelve or more, though only the first and final paintings from any

particular series were selected from the files for this study. In no instance had a patient received any recent active treatment prior to the "first" painting nor was there less than a two week interval prior to termination of therapy[6] and the "final" painting.

The non-psychotic group was selected from among the hospital staff so that they were accessible for frequent retesting and known to have maintained a "normal" adjustment. Clerical and non-medical administrative staff, nurses, attendants and craftworkers and physicians comprised this group. The psychotic groups were composed of cases carefully selected from the extensive finger painting files to meet the requirements of group homogeneity and an adequate and spaced series of paintings as described above. Since there was insufficient satisfactory case material to enable a more refined sub-division, the two schizophrenic groups were composed of patients comprising the four clinical types of schizophrenia, the group whose clinical course showed improvement[7] having, in general, less personality deterioration. Cases of Alzheimer's Disease, Parkinsonism, dementia paralytica and cerebral degeneration following cardiac arrest or cerebro-vascular accident were included in the group with organic brain lesion. The two manic-depressive, manic groups actually had patients in both the manic and hypomanic phase. Because there were too few chronic manic-depressive patients in the depressed phase it was decided in forming the two groups of psychotic depressions, to include in each group an approximately equal number of involutional melancholia and manic-depressive, depressed, cases.

Procedure

The technical procedure used to obtain these finger paintings was simple. The patients painted in groups of from five to ten patients at a sitting on sheets of glazed white paper, 12″ x 18″. They were provided with paint of six different colors: red, yellow, blue, green, brown and black. According to each individual's preference, the paper was given wet or dry and from then on, no instruction or suggestion was given, other than to make a painting by applying the paint with the fingers. An observer was present, usually an Occupational Therapist or a nurse who noted any remarkable behavior. (Since many of the patients were on active treatment, e.g. insulin coma therapy, the presence of an observer was a necessary medical precaution.) If a patient offered any spontaneous comments about his painting, these were recorded. The observer remained as passive as possible because any premature comment could have had disastrous effects on the patient's productions, which can be destroyed, literally, by the wave of a hand.

There was no time limit and when the patients had completed

[6] Meaning such physical therapies as electroshock and/or insulin coma therapy, nitrous oxide gas treatments, prolonged sedation, or fever therapy but not excluding individual and/or group psychotherapy.

[7] This group is labeled as "schizophrenia improved" rather than as "schizophrenia recovered," since in contrast to the manic-depressive disorders, many authorities state that each schizophrenic attack leaves a residual personality defect and hence that remission of symptoms in schizophrenia is not a full recovery but an improvement. Related to this is the argument that the schizophrenia is always present, a schizophrenic episode being due to an exacerbation of the symptoms, an improvement occurring when the symptoms are no longer manifest.

their paintings they went on to their particular occupational therapy program. If the subject matter was not obvious, the patient was asked to title his finger painting. After the paintings had dried they were evaluated by members of the psychiatric or psychological staff and then filed for future reference. Experience suggests that a finger painting obtained at the time of admission to hospital may not be representative of the patient's clinical condition. It is preferable to allow a week for the patient to reorient himself.

Since the patients who painted together were generally well acquainted, coming either from the same ward and/or treatment group, the weekly sessions became a part of occupational therapy with consequent relaxed and sociable atmosphere (insofar as the patients' moods permitted). Certainly, the atmosphere was distinctly different from the classical standardized test administration. Among patients who know one another, there is generally less inhibition and hence, the copying of a neighbor's painting is rare. Prior acquaintance of the group members is more important than prior experience with finger painting, in establishing a favorable atmosphere.

Since the test situation is conducted without a psychologist or psychiatrist present, no time of the personnel trained in projective techniques is required to administer the fingerpainting. Scoring, in the manner described, results in directly meaningful clinical terms so that no complex or deep interpretation is needed—actually it is strictly avoided. Thus, administration, scoring and "interpretation" of a fingerpainting requires but two to three minutes of the clinician's time.

RESULTS

Reliability

Hetherington (13) has shown that energy output, as defined by the per cent area of the format covered, is "remarkably constant" for normal subjects throughout a series of drawings. In agreement with this there was no significant change in mean score ($M = 8.73$ and 9.00) and the test-retest reliability coefficient (Spearman rank - difference method with application of DuBois' formula for tie scores) (11) of the present non-psychotic or "normal" group after a mean interval of 7.5 weeks was a very significant $+.679$, for "energy output."

Normal subjects tend to show a "practice effect" in contrast to psychotic cases whose finger paintings change little without a parallel change in their clinical condition. This practice effect generally involves an experimentation in style often resulting in paintings in which the effects are achieved by creating designs in a uniform background of paint rather than using the paint to produce the design on a white background. The "clarity" score is generally altered by this change in style such that though the group mean remains the same ($M = 7.14$ and 7.14), there is no longer any significant test-retest correlation ($+.313$).

The normal individual being less subject to stereotypy will usually display a changing content from painting to painting. Typical finger painting subject matter is: landscapes, scenes, buildings, plants and trees, and symmetrical abstract designs. Thus, though the "contact with reality" score of the normal subject generally stays within a circumscribed range ($M = 8.18$ and 8.05), their score on this category is apt to vary such that no significant test-retest correlation can be demonstrated ($+.357$).

The "affective range" of these normal subjects, however, showed a significant +.589 test-retest correlation, and as might be expected, no significant change in mean score (M = 8.09 and 9.14).

Psychotic cases whose clinical state remains unchanged, that is, chronic, often produce fingerpaintings from week to week, and even month to month, that are so similar as to be almost identical, and so unchanging, that many can be said to exhibit perseveration. This remarkable lack of variation is clearly shown by the complete lack of significant change (differences between the means) in the four scoring categories when groups of stable (non-changing) clinical condition were retested. These groups, as shown in Table I, were: clinically arrested cases with organic brain lesion, chronic schizophrenics, chronic psychotic depressions, and chronic cases of manic-depressive psychoses in the manic phase retested at an average interval of 10.1, 14.0, 18.5 and 45.0 weeks, respectively. Further, the test-retest coefficients of correlation are significant or very significant in all scoring categories for these patients, ranging in arrested cases with organic brain lesion from +.622 to +.951, in chronic schizophrenics from +.804 to +.924, in chronic psychotic depressions from +.654 to +.934 and in chronic cases of mania (manic-depressive) from +.517 to +.917.

While these findings attest to the lack of change in the groups of stable clinical condition, the consistently high and significant test-retest coefficients of correlation offer evidence of the reliability of finger paintings as an experimental instrument. Many of these reliability coefficients, it should be noted, are sufficiently high to warrant considering the method as useful for individual prediction.

On the other hand, those subjects who improved with treatment showed marked qualitative and quantitative changes in their finger paintings and consequently negligible, that is, insignificant test-retest correlations, with one exception, ranging from +.317 to −.255 in schizophrenics who improved with treatment and from +.486 to −.032 in cases of mania (manic-depressive) who recovered with treatment. Though the mean values for all categories showed an increase following improvement among the schizophrenic group, only those for "contact with reality" (M = 4.90 and 8.55) and "clarity" (M = 5.55 and 8.00) could be termed significant. The only significant mean change in the manic group following recovery was an increased "clarity" score (M = 4.38 and 6.56). The test-retest correlations in cases of psychotic depression who recovered are most interesting and warrant further and closer investigation. While the mean scores in all categories showed a significant increase following recovery, there was still a very significant test-retest correlation for "energy output" (+.681). Though the other categories do not show statistically significant correlations, they approach this level (+.459, +.492, +.432), this trend suggesting that a change from a retarded depression to recovery is more a quantitative than a qualitative phenomenon.

Some indication of the variability of individual scores within a particular group is given by the comparison of standard deviations in Table II. For each clinical group studied, the "contact with reality" score was significantly more variable than among the non-psychotic subjects, demonstrating that in psychotic groups there is wider range

TABLE II—Significance of Difference Between Standard Deviations (t Values) of the Finger Painting Categories : Comparison of Non-Psychotic to the Diagnostic Groups (First Painting)

Diagnoses	Energy Output	Affective Range	Reality Contact	Clarity
Non-Psychotic vs Organic Brain Lesions	0.27	0.28	2.58*	1.65
Non-Psychotic vs Schizophrenia chronic	2.34*	0.27	3.31**	2.40*
Non-Psychotic vs Schizophrenia improved	2.23*	0.92	2.69*	1.47
Non-Psychotic vs Psy. Depression chronic	1.66	0.32	3.07**	0.96
Non-Psychotic vs Psy. Depress. recovered	1.42	1.90	2.21*	1.87
Non-Psychotic vs Mania chronic	2.91**	0.74	3.27**	0 53
Non-Psychotic vs Mania recovered	0.82	0.39	3.14**	1.02

of subject matter and hence that in this sense, it is the least reliable of the categories for differentiating between the groups. This would appear to substantiate Lehmann's decision that to permit an objective rating of fingerpainting, the use of content should be minimized in contrast to the qualitative and "interpretative" approaches where content is of major importance. Though there are several standard deviations among the clinical groups significantly larger than for the non-psychotic subjects in "energy output," it is not a consistent trend, while for the categories of "affective range" and "clarity," there is with but one exception, no significant difference between the standard deviations of the present groups. Thus, apart from "contact with reality," the standard deviations are fairly uniform within each category suggesting that the mean differences between the groups are stable ones.

For many tests it has been pointed out that schizophrenics, as a group, are markedly inconsistent and variable in their performance. This trend is also evident in the present data by their generally larger standard deviations, though the fact that these groups are heterogeneous in regard to type of schizophrenia must be considered.

Validity

In order to test the hypothesis that the four categories "energy output," "affective range," "contact

TABLE III—Significance of Difference Between Means (t Values) of the Finger Painting Categories for the Diagnostic Groups Studied

Diagnoses	Energy Output	Affective Range	Reality Contact	Clarity
		FIRST PAINTING		
Non-Psychotic vs Organic Brain Lesion	7.78**	3.16**	3.39**	3.40**
Schizophrenia chronic	3.33**	3.71**	4.28**	3.01**
Schizophrenia improv.	3.93**	1.81	4.09**	2.48*
Psy. Depress. chronic	2.80**	2.46*	3.22**	3.00**
Psy. Depress. recov.	4.31**	5.30**	5.75**	3.81**
Mania chronic	1.97	0.96	2.68*	3.85**
Mania recovered	1.18	0.08	1.72	4.21**
		FINAL PAINTING		
Non-Psychotic vs Schiz. improved	2.84**	1.72	0.57	1.89
Psy. Depress. recov.	1.97	1.13	1.55	4.48**
Mania recovered	0.95	0.20	0.23	1.12
Schizoph., chronic vs improved	1.82	2.29*	4.36**	3.86**
Psy. Depress., chronic vs recovered	2.25*	2.18*	3.54**	6.11**
Mania, chronic vs recovered	2.04*	2.41*	2.04*	2.65*

with reality" and "clarity" as rated in the fingerpaintings actually relate to the painters' overt behavior and clinical manifestations – and may be described directly in these terms–a comparative statistical analysis of the mean scores for the eight sample groups was made.

A psychotic disorder can be expected to impair responsiveness and in concurrence, it was found that the four categories generally showed statistically significant differences between the non-psychotic and clinical groups, in the nature of lower mean values for the latter (see Table III). This is to say, that the finger paintings demonstrated a reduced energy output, affectivity, reality contact and intellectual control among the psychotic subjects, what might be termed a generalized reduction of output. Prime exceptions to this are the manic-depressive, manic groups neither of which showed any significant reduction of "energy output" or "affective range." Clinically this disorder is characterized by a loss of control ("clarity") rather than a deficit to the range or intensity of expression. In chronic manics there is apparently a poorer reality contact, however. A final, but most interesting exception, is the non-significant difference in "affective range" between non-psychotics and schizophrenics who later improve. The preservation of a good affective range has long been recognized as bearing a more favorable prognosis in schizophrenia.

Certain clinical expectations would have to be fulfilled if the four scoring categories are actually measuring the respective behavioral and psychological aspects designated by their headings. The highest "energy output" and widest "affective range" would be expected in the manic and the lowest scores in these categories in the depressed group. A low score in the category "contact with reality" would fit into the clinical picture of schizophrenia while a low score in "clarity" would be expected in the group with organic brain lesion. It is interesting to note that there is almost no significant difference in the categories "contact with reality" and "clarity" between the clinical groups. Thus, it would appear that these categories show little difference in the degree of impairment among the various psychotic sample groups and hence that clarity and contact with reality, as judged by finger paintings, seem to be generally and equally impaired in most severe mental disorders.

Among the two groups of schizophrenia, psychotic depression, and mania, no significant difference could be shown before treatment between the group that recovered and its control that remained chronic. However, following treatment the recovered group was readily distinguishable from the chronic group as shown by the significant mean increases in all categories on the final finger painting, with the exception of "energy output" for the schizophrenic groups. Judging by the final finger paintings, recovered manics are indistinguishable from non-psychotic, that is, normal subjects as a group. When recovered or improved (about to be discharged from hospital with clinical justification), cases of former schizophrenia or psychotic depression show no differences from normal subjects in their (final) finger paintings with the exception of a significantly higher "clarity" among the recovered psychotic depressions and a significantly lower "energy output" among the improved schizophrenics. In keeping with this, the case histories of many patients

who suffer from schizophrenia show a long standing poor activity level evidenced in frequent change of jobs, often with gradual downgrading and employment at tasks beneath their educational and/or intellectual capacity. Those patients who incur a depression frequently exhibit a lifelong regard for accuracy, neatness, honesty and caution.

While it is evident that this investigation is not concerned with the artistic qualities of finger paintings, it is worth noting that the artistic and aesthetic value of a patient's painting quite often showed a definite decline while the scores in the formal criteria (categories) improved simultaneously with the improvement in his mental condition. As a general rule of thumb, it can be said that a tendency to produce prosaic commonplace finger paintings reflects a favorable trend in a psychotic patient.

The nature of the clinical material obviously limits the observations that can be drawn. This is particularly apparent when the results of this study are compared to those of Lehmann and Risquez (17). By carefully selecting each subject according to characteristic clinical syndromes, rather than merely an identical diagnostic label, they were able to show significant mean differences in "energy output," "affective range" and "clarity" not only in a comparison of their non-psychotic and clinical groups, but also between their clinical groups. The present investigation was not as conclusive in this latter respect since it was designed principally as a reliability study with consequent stringent requirements on the number of paintings per series, the timing of the first and final painting, with reference to treatment, and the interval between them, such that there did not remain a sufficient number of cases to enable further refinement of selection beyond uniformity of diagnosis and clinical course. A further study, selecting sub-groups of like diagnosis but with different symptoms and different degrees of a particular symptom, is in process. Inspection of these data indicates, in brief, that "clarity" is related to extent of intellectual impairment in cases with organic brain lesion, that "contact with reality" is impaired by delusional thinking and personality deterioration in schizophrenia, and that "energy output" and "affective range" vary according to phase in the manic-depressive psychoses.

Some validation against an outside criterion is available though this phase of the investigation is only in its beginning stages. Using a normal group of seventeen subjects, very carefully selected with regard to their mental health and level of adjustment, it was possible to show that the finger painting scoring categories showed positive correlations with the Rorschach test factors that we might logically expect them to be related to (9). Both tests were obtained at one sitting, and the Rorschach tests were scored according to the system of Klopfer and Kelley and Davidson (15, 16). Based on their correlation with this normal group: finger painting "energy output" to number of Rorschach whole responses showed a very significant +.697 correlation; finger painting "affective range" to number of Rorschach responses with color showed a significant +.525 correlation; finger painting "contact with reality" to number of Rorschach popular plus "very frequent" responses (22) showed a correlation of +.456, approaching significance; and finger painting "clarity" to Rorschach average form level of response showed a correla-

TABLE IV—Intra-Test Correlations Among Fingerpainting Categories

Diagnosis	Order	N	P = .05	EO − AR	EO − RC	EO − C	AR − RC	AR − C	RC − C	Aver.
Non-Psychotic	first	22	.423	+.396	−.060	+.141	−.076	+.020	+.372	+.132
(normal)	final	22	.423	+.198	−.225	+.113	+.192	+.287	+.207	+.129
Organic Brain	first	15	.514	−.044	+.327	+.544*	+.078	+.108	+.712**	+.288
Lesion	final	15	.514	+.266	+.119	+.271	+.207	+.404	+.742**	+.335
(arrested)										
Schizophrenia	first	20	.444	+.739**	+.120	+.465*	−.111	+.046	+.638**	+.316
(chronic)	final	20	.444	+.711**	+.356	+.584**	+.305	+.169	+.667**	+.465
Schizophrenia	first	20	.444	+.661**	+.393	+.444*	+.247	+.620**	+.357	+.454
(improved)	final	20	.444	+.453*	−.267	−.152	+.308	−.145	+.490*	+.114
Psy. Depress.	first	17	.482	+.159	+.015	+.209	+.227	+.302	+.735**	+.274
(chronic)	final	17	.482	+.390	+.082	+.419	−.111	+.346	+.458	+.264
Psy. Depress.	first	15	.514	+.379	+.349	+.334	+.407	+.336	+.949**	+.464
(recovered)	final	15	.514	+.448	+.062	+.503	+.064	+.695**	+.210	+.330
Mania	first	16	.497	+.735**	+.288	+.153	+.362	+.017	+.402	+.326
(chronic)	final	16	.497	+.651**	+.322	−.050	+.262	+.074	+.358	+.270
Mania	first	16	.497	+.529*	−.067	+.079	+.075	+.536*	+.505*	+.276
(recovered)	final	16	.497	+.636**	+.212	−.084	−.168	−.347	+.321	+.095

tion of +.433 approaching significance.

Perhaps more interesting and provocative, was the absence of any significant correlations between factors of these two tests for the psychotic group studied (9) (mainly schizophrenics). However, such a discussion is beyond the scope of the present paper.

Internal Organization of the Personality

An exploratory study (9) of the intratest correlations of finger paintings had suggested that the internal organization of personality in the psychotic state is different from that of normal subjects. An investigation of the relationship between the finger painting categories for the present groups substantiates this finding. As can be seen in Table IV, the categories for subjects of the non-psychotic or normal group are independent both in the first and final paintings indicating that each category is measuring a separate and distinct aspect of personality. Among the psychotic groups, however, there is a tendency for certain of the categories to be interdependent. Considering the first paintings of the seven clinical groups, four groups show a significant correlation between their "energy output" and "affective range," three between their "energy output" and "clarity," two between their "clarity" and "affective range," and five between their "clarity" and "reality contact." Throughout the groups "reality contact" remains unrelated to "energy output" or "affective range." These significant intratest correlations among the psychotic groups would suggest that their finger painting test results will yield

a more unified picture, tending to point to one general conclusion, the impairment to functioning of the psychotic condition. Among normal subjects where all categories remain discrete, a picture of variation is obtained, that is, the flexibility of the normal personality structure is in evidence. In this regard, Williams (26) has suggested that inefficiency under stress tends to spread (progressively involve other spheres) as mental health is further impaired.

Most interesting, is the pattern of the intratest correlations when considered in terms of the clinical course. Among the groups of stable clinical condition, the significant correlations between finger painting categories show little change of consequence from first to final painting. Thus in chronic schizophrenics, psychotic depressions and manics, the pattern on retest is unaltered. (The lack of significant correlation between "energy output" and "clarity" in the final painting of the group with organic brain lesion cannot be adequately explained.) The groups that improve or recover following treatment, however, show quite notable pattern changes in their final paintings. This would appear to offer statistical evidence of the reorganization of personality structure with positive changes of consequence in the clinical condition. It is possible that an extension of this approach could actually offer us a statistical basis for the synthesis of projective test data in interpretation by showing the actual extent to which the test factors are related and how these relationships alter with mental aberration.

SUMMARY

The development of a method for the objective evaluation of finger paintings is outlined. Ratings scales for the scoring categories of "energy output," "affective range," "contact with reality" and "clarity," that are directly meaningful clinically, have been described. The categories are shown to provide statistically reliable and valid test data in a variety of clinical groups. Intratest correlational studies of finger paintings appear to illustrate the internal changes in organization of the personality structure with changing clinical condition of the psychotic patient.

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The Application of the Piotrowski and the Hughes Signs of Organic Defect to a Group of Patients Suffering from Post-traumatic Encephalopathy [1]

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In Piotrowski's (8) early study of personality changes in organic brain disease, he identified ten signs as indicative of cerebral organic damage on the basis of an analysis of the Rorschach records of 18 cases of organic cerebral involvement, 10 cases of non-cerebral involvement of the nervous system and 5 of conversion hysteria. These are listed in Table II. The average number of signs in the group with organic cerebral involvement was 6.2; in the other groups, 1.5. Piotrowski concluded from his study that if 5 or more of these signs were present, there was strong justification for the diagnosis of organic cerebral involvement of the cortex. He emphasized the fact that no single sign alone points to organic involvement of the brain cortex. He also suggested that the validity of his signs would be strengthened if other aspects of the record were considered, as the abnormal infrequency and the abnormal distribution of color responses. Finally, he emphasized the importance of a qualitative analysis of the Rorschach record. In subsequent studies, Piotrowski (9, 10) confirmed the usefulness of his signs.

More recently, Aita, Reitan, and Ruth (1) compared 60 post-traumatic brain injured patients with 100 control patients in order to determine differential Rorschach patterns characteristic of organic disturbance. They also evaluated Piotrowski's ten signs of cerebral disturbance. They reported that the total number of responses was not of particular value. Although the brain injured patients had a lower number of responses than the controls, it was not enough to be significant. They found that the average response time was more helpful in differentiation but felt that Piotrowski's level of more than 60 seconds was too low. The mean number of M responses, F+%, P and Rpt were not of significance. Color naming was found more often in cases with organic brain damage but relatively infrequent in post-traumatic cases. The most important results were found in signs AP, Perplex, and Imp. Imp occurred in all cases but it diminished with the severity of the cases. They identified nine additional signs which were found to be helpful for diagnosis. These will be considered in a subsequent paper.

An approach based exclusively on statistically designed procedure is that of Robert Hughes (6) who published a new list of signs with weights, derived from a factor analysis of 22 different Rorschach signs proposed in the literature for the diagnosis of various types of organic pathology. These are presented in Table III. The criteria for scoring each of the signs as present or absent were those described

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by Klopfer and Kelley (7) and Piotrowski (8). A score of 7 or above was taken as diagnostic of organic pathology; 3-6 inclusive to be considered as "probably organic," and cases with scores below 3 diagnosed as "not organic."

No effort was made to select specific types of brain damage which might have yielded even more satisfactory results. The organic cases included traumatic head injuries, cases of cerebral arteriosclerosis, brain tumors and cases of cerebral syphilis.

Hughes gave evidence for the greater diagnostic efficiency of his signs over those proposed by Piotrowski. Applying Piotrowski's signs to his organic cases, only 20% could be identified without including some non-organic cases, while with the Hughes' battery of signs, 82% of the organics could be identified without including any non-organic cases.

Diers and Brown (3) investigated the occurrences of certain types of Rorschach test behavior, supposedly peculiar to cases of organic brain damage, in patients without demonstrative organic involvement but of a low intellectual level. They compared the occurrence of the Hughes' organic signs in a group of multiple sclerotic patients of above average intelligence with a group of multiple sclerotic patients of below average intelligence. They also compared the latter with a control group of non-neurological patients of like intellectual level. They found that in the multiple sclerotic patients, the lower intelligence group exhibited a greater number of Hughes' signs and a higher weighted mean score to a statistically significant degree. No significant difference in mean Hughes' signs was found between the lower multiple sclerotic group and the control group. They suggested that the Hughes' signs discriminate inadequately between patients with intracranial pathology and patients of low original intellectual endowment. They further questioned the validity of the sign approach and suggested that the Hughes' signs be restricted to exploratory and experimental uses until their validity is established.

Thus it may be seen that studies utilizing the signs of Piotrowski and Hughes for diagnosing organic defect show contradictory and inconclusive results. The purpose of the present study is to determine their usefulness in differentiating patients suffering from post-traumatic encephalopathy from non-organic neurotic and schizophrenic patients. Specifically, Rorschach records of a group of post-traumatically injured patients were compared with two contrasting groups, one with neurotic symptoms and the other psychotic, neither of which showed organic defect. The research was designed to answer the specific question—are the signs postulated by Piotrowski and Hughes for detecting organic involvement valid when applied to post-traumatic encephalopathy? Our research was designed then to test out the following hypotheses:

1. The Piotrowski Rorschach signs are not diagnostic and are insufficient in themselves to differentiate a group suffering from post-traumatic encephalopathy from a group of non-organic neurotic and psychotic patients.
2. The Hughes signs for detecting organic involvement are not diagnostic and are insufficient in themselves to differentiate a group suffering from post-traumatic encephalopathy from a group of non-organic neurotic and psychotic patients.

SUBJECTS

The Rorschach records of three groups of patients, 50 in each were selected from the files of the Psychology Department of the Veterans Administration Hospital, Cleveland, Ohio. All were white male veterans of World War II. A total of 50 records was included in each group. The sample was selected without bias, with intelligence, social background, education and occupation ranging from low average to above average.

Table I shows the age range, education, and occupation of the three groups studied.

The post-traumatic group consisted of veterans with an age range from 20 to 50 years. As may be seen from Table I, 32 were between the ages of 20 and 29, 11 between 30 and 39, and seven between 40 and 50. All had suffered head injury although not all of the injuries were service-connected. The injuries were incurred either while in the service or after discharge. Injuries were focal, focal-diffuse, and diffuse in nature with the degree of incapacity termed as mild, moderate, or severe. Of the group, 6 were considered to be mildly incapacitated, 28 moderately incapacitated and 16 severely incapacitated. The Rorschach records were selected at random and based on the final diagnosis of the medical staff. All diagnoses indicated Post-traumatic Encephalopathy as determined by neurological findings, electroencephalographic and pneumoencephalogram readings and psychiatric examination, all independent of the Rorschach findings. Of the total sample, all cases were tested prior to any surgical procedure with the exception of four. Of these four cases, each had incurred his injury during combat and had immediate surgery at the front lines station hospital for the removal of shrapnel and the insertion of silver plates.

The educational range of the post-traumatic group was from fifth grade to four years of post-graduate work. From Table I it may be seen that nine had grade school education, 37 had attended high school, and four, college. It may also be seen that a variety of occupations were represented, the majority of the group falling in the "skilled labor" class.

TABLE I—Age, Education, and Occupational Status of the Sample.

	Distribution	Post-traumatic	Schizophrenic	Neurotic
Age	40-49	7	3	8
	30-39	11	9	18
	20-29	32	38	24
	Total	50	50	50
Education	College and Post-graduate	4	4	4
	High School	37	41	40
	Grade School	9	5	6
	Total	50	50	50
Occupation	Unemployed	5	13	5
	Student	1	3	3
	Unskilled labor	14	16	6
	Skilled labor	20	13	16
	Salesman	1	2	7
	Clerical	6	2	8
	Business	0	1	2
	Professional	3	0	3
	Total	50	50	50

The contrasting groups consisted of 50 schizophrenics and 50 psychoneurotics.

The records of the schizophrenic group were chosen at random on the basis of the diagnosis of the psychiatric staff, independent of the Rorschach findings. They were all classified as being of the paranoid type and had been referred to the psychology department prior to being placed on either electric shock or insulin shock therapy. All testing was done prior to the administration of any treatment. Of the entire schizophrenic group, all were service connected with the mental breakdown having occurred during the time of military service. None had a history of psychosis prior to induction. Hospitalization had been both continuous and intermittent from the onset of symptoms. All were considered in an acute phase of illness.

The age range of the schizophrenic group was from 22 to 45 years, 38 between the ages of 22 and 29, nine between 30 and 39, and three between 40 and 45 years. Education ranged from the sixth grade to college level. As may be seen, they show a diversity of occupations.

The psychoneurotic group ranged in ages from 20 to 50 years. Twenty-four were between the ages of 20 and 29, 18 were between the ages of 30 and 39, and eight between the ages of 40 and 50. Records were selected randomly and based on the diagnosis of the psychiatric staff, independent of Rorschach findings. All were diagnosed as Psychoneurosis, Anxiety Reaction, service connected. None had a history of having had a severe emotional disturbance prior to induction into the military service. The cases were referred to the psychology department for testing prior to the patient's being considered for intensive psychotherapy. Hospitalization had been intermittent from the onset of symptoms and at no time had any of the cases been considered psychotic by the psychiatric staff.

Education of the neurotic group likewise ranged from grade school to college. Their occupations were likewise diversified.

Comparing the age distribution of the three groups, it may be observed that the largest proportion of each group falls in the 20 to 29 age interval. A larger number of neurotic patients were over 30 years of age, however. To the writers' knowledge, no studies have been published which demonstrate reliable differences in Rorschach patterns between these age groups. In clinical practice, the same Rorschach norms are used for adults 20 years and over.

Comparing the groups on educational status, they appear to be distributed in similar fashion. Viewing the distribution of occupations, the majority of the post-traumatic and schizophrenic groups fall in the "unskilled labor" and "skilled labor" categories. The largest proportion of the neurotic group, however, is in the "skilled labor" category.

Procedure

The Rorschach records were scored according to the Hertz (4) scoring method and detailed psychograms (5) prepared for each of the patients. In addition, the Piotrowski and Hughes signs were noted on the psychogram whenever they occurred. The records of the three groups of patients were compared. Specifically, the groups were compared first in terms of Piotrowski's organic signs in order to test out hypothesis one which states that the Piotrowski signs are not diagnostic and are insufficient in

themselves to differentiate post-traumatic patients from contrasting groups.

The three groups were next compared for the organic signs and weighted scores as set forth by Hughes to test out hypothesis two and to show that the Hughes signs for detecting organic involvement are insufficient in themselves to differentiate a group suffering from post-traumatic encephalopathy from contrasting groups.

The total number of signs were computed, medians, quartiles, and semi-intrequartile ranges calculated for each of the groups. The Probable Error of medians were computed by using the formula

$$\frac{1.2533Q}{\sqrt{N-1}}$$

The standard error of the medians were next computed by using the following formula:

$$\frac{\frac{1.2533Q}{\sqrt{N-1}}}{.6745}$$

The significance of the differences between the medians of each group were calculated using the formula:

$$t = \frac{Mdn\ 1 - Mdn\ 2}{\sqrt{SE\ Mdn_1^2 + SE\ Mdn_2^2}}$$

The "t" values were interpreted with 98 degrees of freedom and the five percent level of confidence used. The probability values obtained from these t values served to indicate whether a group of signs reliably differentiated the post-traumatic patients from schizophrenic and neurotic patients when considered in toto.

In order to study the nature of the distributions of scores under consideration, cumulative frequencies and cumulative percentages were calculated. In addition, whereas the previously mentioned approaches were concerned with a consideration of the data in terms of the total productivity, each sign was also examined in order to determine its efficiency in differentiating the organic from the contrasting groups. This was done by computing the proportion of each group showing each specific sign and determining the significance of the differences between the proportions. Instead of using the usual formula

$$\sigma p_1 - p_2 = \sqrt{\frac{pq}{N_1} + \frac{pq}{N_2}}$$

po was substituted for p in accordance with Cronbach's (2) recommendation where

$$po = \frac{N_1p_1 + N_2p_2}{N_1 + N_2}$$

Next, specific signs were presented in rank order according to frequency to study the relative importance of the particular sign.

RELIABILITY

To the writers' knowledge, the reliability of the organic signs as proposed by previous research workers has never been established. In order to determine reliability of the signs, 24 records were selected at random and a second experienced Rorschach interpreter identified the signs independently. The identifications of the two interpreters on each record were then compared. The Chi Square Test of Significance was employed to evaluate the degree of significance of agreement between the two interpreters.

Tables II and III indicate a probability ratio of .98 indicating that the two interpreters are no more different in recognizing the Piotrowski and Hughes signs than chance would allow. Thus, the hypothesis that a skilled Rorschach interpreter can reliably identify signs is tenable.

Results

A. *Piotrowski Signs*

From Tables IV through VIII an analysis may be made of the diagnostic value of the Piotrowski organic signs for differentiating the post-traumatic group from the schizophrenic and neurotic groups.

Table IV summarizes the total number of Piotrowski's signs given by each group, the medians, quartiles, the probable error of the medians, standard error of the medians and the t values of each group in terms of the total possible number of signs.

From Table IV it may be noted that the post-traumatic group as a whole gave a median of 3.00 Piotrowski organic signs, Q 1.40 as compared to a median of 1.93, Q .97 of the schizophrenic group and a 1.13 median, Q .75 of the neurotic group. It may be seen in the table that the differences between

Table II—Reliability Study: Chi-Square Test of Significance Indicating The Degree of Agreement Between Two Rorschach Interpreters in Identifying Piotrowski's Ten Organic Signs.

Sign	1st Interpreter fo	1st Interpreter fe	2nd Interpreter fo	2nd Interpreter fe	$\left(\frac{o-e}{e}\right)^2$
1. R	5	5	5	5	.
2. T/R	6	5.5	5	5.5	.09
3. M	11	12	13	12	.166
4. Cn	5	4.5	4	4.5	.110
5. F%	10	9.5	9	9.5	.052
6. P%	14	12.5	11	12.5	.360
7. Rpt	7	5	3	5	1.600
8. Imp	4	4	4	4	
9. Plx	8	8	8	8	
10. A.P.	6	6.5	7	6.5	.076
					2.454 = X^2 P = 98

d f 9
N = 24

Table III—Reliability Study: Chi Square Test of Significance Indicating the Degree of Agreement Between Two Rorschach Interpreters in Identifying Hughes' Organic "Signs."

	Sign	1st Interpreter fo	1st Interpreter fe	2nd Interpreter fo	2nd Interpreter fe	$\left(\frac{o-e}{e}\right)^2$
1	R <15	5	5	5	5	
2	R <25	16	16	16	16	
3	<2M	12	12.5	13	12.5	.04
4	Cn	4	4	4	4	
5	<2FC	18	18	18	18	
6	Persev	12	12	12	12	
7	Plx	8	8	8	8	
8	A.P.	7	7	7	7	
9	C sh	22	22	22	22	
10	Sh sh	21	20.5	20	20.5	.024
11	FM>M	15	15	15	15	
12	Conf. Succ	1	4	7	4	4.50
13	Contam.	6	5.5	5	5.5	.090
						4.654 X^2 P = .98

d.f. 12
N 24

TABLE IV—Total Number of Piotrowski Signs, Medians, and Quartiles, And Probability Values Indicating the Significance of the Differences Between the Medians.

	P–T (n = 50)	S (n = 50)	N (n = 50)
Total No.	153	105	63
Mdn	3.00	1.93	1.13
Q1	1.71	1.00	.46
Q3	4.5	2.94	1.95
Q	1.40	.97	.75
S.E. Mdn	.3715	.2573	.1991

	t values		P value
P-T–S	2.37	P-T–S	<.05
P-T–N	4.44	P-T–N	<.01
S–N	2.46	S–N	<.02

Key
P-T = Post-traumatic
S = Schizophrenic
N = Neurotic
t or critical ratio
P = probability

TABLE V—Cumulative Frequencies and Cumulative Percentages of Each Group of Patients on Piotrowski's 10 Organic "Signs."

Groups:	P-T (n = 50)		S (n = 50)		N (n = 50)	
No. of Piotrowski's Signs	CUM F	CUM %	CUM F	CUM %	CUM F	CUM %
10						
9						
8						
7	4	8	1	2		
6	7	14	1	2		
5	13	26	4	8		
4	17	34	8	16	2	4
3	32	64	16	32	7	14
2	39	78	31	62	17	34
1	41	82	44	88	37	74
0	50	100	50	100	50	100

Key
S Schizophrenics
P-T Post-traumatic
N Neurotics
n Number of patients

TABLE VI—Proportions of the Groups Showing a Specific Number of Piotrowski's "Signs," Differences Between Them, and Reliability of Those Differences.

Group:	P-T %	S %	N %	Diff P-T–S	P	High	Diff P-T–N	P	High	Diff S-N	P	High
5 or more signs	26	08	00	18	*.02	P-T	26	*.001	P-T	08	*.05	S
4 or more signs	34	16	04	18	*.04	P-T	30	*.001	P-T	12	*.05	S
3 or more signs	64	32	14	32	*.01	P-T	50	*.0001	P-T	18	*.04	S

Key
P-T Post-traumatic
S Schizophrenic
N Neurotic
Diff Difference between proportions
High Group Showing higher proportion
P Probability value
* Significant at 5% level or better

the medians of the groups are significant below the five percent level. Since there are ten Piotrowski signs, the total possible number of signs for each group of 50 patients is 500. Thus, the post-traumatic group gave 153 or 31 percent of the total number of the signs possible. This compares with 21 percent for the schizophrenic group and 13 per cent for the neurotic group. Therefore, of the total number of signs possible, the largest proportion was given by the post-traumatic group, the smallest proportion by the neurotic group.

Table V presents the cumulative frequencies and cumulative percentages of each group of patients on Piotrowski's 10 organic signs. Table VI summarizes the proportions of the groups giving a specific number of these signs with indications of the significance of these differences between them. It may be observed (Table V) that 4 or 8 percent of the post-traumatic group gave 7 or more signs as compared to one patient in the schizophrenic group and none in the neurotic group. Again, 13 or 26 percent of the post-traumatic group gave 5 or more signs as compared with 8 percent of the schizophrenic group and none of the neurotic group. From Table VI we note that these differences are significant. Reliably more of the post-traumatic patients than either the schizophrenic or neurotic patients showed 5 or more signs. It may be concluded that 5 or more of the Piotrowski signs are valid in differentiating the post-traumatic group from the contrasting groups.

It must be emphasized, however, that since only 26 percent of the post-traumatic group showed 5 or more signs, 74 percent failed to show 5 or more. Thus, almost three-fourths of the post-traumatic group did not show the number of signs considered necessary for diagnosis. On the other hand, only 8 percent of the non-organic patients gave 5 or more signs. Thus while 5 or more signs do not correctly diagnose as organic a large proportion of the post-traumatic group, they do not falsely identify the non-organic group.

The proportions of the groups studied showing each of the Piotrowski signs are seen in Table VII. It may be observed, for example, that 34 percent of the post-traumatic group showed sign R, 26 percent showed T, 58 percent showed M, etc. The lowest proportion of the group, 16 percent, showed sign AP. Studying the schizophrenic group, none showed two signs, Plx and AP. Over half of the schizophrenic group showed sign M. With the neurotic group, only two percent showed Rpt, Imp, Plx, and AP.

The reliability of the differences between the proportions of the groups giving each sign may be observed in Table VII. Comparing the post-traumatic patients with schizophrenic patients, it may be seen in Table VII, that significantly more of the post-traumatic group gave only three signs at the one percent level or better — Imp, Plx, and AP. On the other signs, no reliable differences were indicated.

Viewing the post-traumatic and neurotic groups, it may be seen that significantly more of the post-traumatic group showed eight signs —R, T, F%, P%, Rpt, Imp, Plx, and AP. It may be seen then that only three signs appear to differentiate the post-traumatic group from both the schizophrenic and neurotic groups—Imp, Plx, and AP.

It is interesting to note that only three signs are significant in differentiating the schizophrenic pa-

tients from neurotic patients, F%, P%, and Rpt—more of the schizophrenic patients giving these signs. We have just observed that significantly more of the post-traumatic patients than the neurotic patients gave these signs also. Thus, it appears that these three signs reliably differentiate the neurotic group from either the post-traumatic or the schizophrenic group.

From Table VIII we may note the rank order of the Piotrowski signs based upon the frequency of occurrence in each of the groups. It may be observed that signs M, R, P%, and F% ranked highest in all groups. Cn, a sign that Piotrowski considered especially valuable and which occurs more frequently in the post-traumatic group than in the contrasting groups has the 8.5

TABLE VII—Proportions of Each Group Showing Piotrowski's Organic Signs, the Difference Between Them and the Significance of These Differences.

	P-T	S	N	P-T—S			P-T—N			S—N		
				Diff	P	High	Diff	P	High	Diff	P	High
Pattern	%	%	%	%			%			%		
R	34	24	14	.10	.28	P-T	.20	*.02	P-T	.10	.21	S
T/R	26	12	10	.14	.08	P-T	.16	*.04	P-T	.02	.75	S
M	58	54	52	.04	.69	P-T	.06	.55	P-T	.02	.85	S
Cn	20	8	10	.12	.09	P-T	.10	.17	P-T	.02	.73	N
F%	34	42	12	.08	.41	S	.22	*.01	P-T	.30	*.001	S
P%	46	44	20	.02	.85	P-T	.26	*.01	P-T	.24	*.02	S
Rpt	20	22	2	.02	.81	S	.18	*.01	P-T	.20	*.01	S
Imp	26	4	2	.22	*.01	P-T	.24	*.001	P-T	.02	.56	S
Plx	26	0	2	.26	*.001	P-T	.24	*.001	P-T	.02	.32	N
AP	16	0	2	.16	*.01	P-T	.14	*.02	P-T	.02	.32	N

Key

P-T Post-traumatics
S Schizophrenics
N Neurotics
Diff. Differences between the groups
P Probability value indicating the significance of the differences between the proportion of the groups
High Group showing higher proportion

* Significant at 5% level or better

TABLE VIII—Piotrowski Signs Presented in Rank Order Based Upon Frequency of Occurrence in Each of the Groups.

	P-T (n = 50)		S (n = 50)		N (n = 50)	
Pattern	f	Rank	f	Rank	f	Rank
M	29	1	27	1	26	1
P%	23	2	22	2	10	2
R	17	3.5	12	4	7	3
F%	17	3.5	21	3	6	4
T/R	13	6	6	6	5	5.5
Imp	13	6	2	8	1	8.5
Plx	13	6	0	9.5	1	8.5
Cn	10	8.5	4	7	5	5.5
Rpt	10	8.5	11	5	1	8.5
A.P.	8	10	0	9.5	1	8.5

Key

P-T Post-traumatic
S Schizophrenic
N Neurotic

rank in the post-traumatic patients. Similarly, AP, which is given by 8 of the post-traumatic patients as opposed to one of the neurotic and none of the schizophrenic patients has the lowest rank in the post-traumatic group.

Thus it may be seen that while the Piotrowski signs significantly differentiate the post - traumatic group from the schizophrenic and/or neurotic groups, most of them occur with great infrequency in the post-traumatic group.

Summary

1. The results indicate that while Piotrowski's criteria of 5 or more signs in a record is valid in differentiating the post-traumatic group from schizophrenic and neurotic groups, they occur with such infrequency in the post-traumatic records that they cannot be relied upon exclusively for diagnostic purposes. The presence of five or more of these signs in a record may be said to reflect organic pathology. Their absence, however, is not contra-indicative of organic pathology.

2. Hypothesis one is only partially substantiated. Piotrowski signs appear to be diagnostic of organic pathology and differentiate the group of post-traumatic patients from neurotic and/or psychotic groups. The Piotrowski signs, however, appear only in a small proportion of the group and while their presence may be said to reflect organic pathology, their absence does not preclude organic pathology.

B. *Hughes Organic Signs*

Table IX shows the total weighted score of the Hughes signs for each of the three groups studied. It may be observed that the post-traumatic group gave a median score of 1.71, Q 2.75 as compared to a median of .56, Q 1.88 of the schizophrenic group and a .25 median, Q 1.56 for the neurotic group. Thus the median scores for the post-traumatic group was higher than that for the other groups. The differences between the groups were not significant, however, as seen in the table.

From Table X we note the cumulative frequencies and per-

Table IX—Total Weighted Score of Hughes' Organic Signs, Medians, Quartiles, and Probability Values Indicating the Differences Between the Medians.

	P-T (n = 50)		S (n = 50)	N (n = 50)
Total	69		29	7
Mdn	1.71		.56	.25
Q1	−1.58		−1.56	1.67
Q3	3.92		2.20	1.45
Q	2.75		1.88	1.56
S.E. Mdn	.7300		.4990	.4140
		t		P
	P-T−S	1.31	P-T−S	>.10
	P-T−N	1.73	P-T−N	>.05 <.10
	S −N	.47	S−N	>.50

Key
P-T = Post-traumatic
S = Schizophrenic
N = Neurotic
t or critical ratio
P = probability

TABLE X—Cumulative Frequencies and Cumulative Percentages of Each Group of Patients on Total Weighted Score of Hughes' Organic Sign Battery.

Total Weighted Hughes Scores	P-T (n = 50)		S (n = 50)		N (n = 50)	
	CUM F	CUM %	CUM F	CUM %	CUM F	CUM %
11						
10	1	2				
9	1	2				
8	1	2				
7	3	6				
6	5	10	2	4	1	2
5	8	16	4	8	3	6
4	14	28	8	16	3	6
3	19	38	11	22	11	22
2	26	52	16	32	12	24
1	28	56	24	48	23	46
0	34	68	33	66	29	58
−1	37	74	37	74	36	72
−2	43	86	45	90	45	90
−3	49	98	49	98	47	94
−4	50	100	50	100	49	98
−5					49	98
−6					50	100
−7						

Key
P-T Post-traumatic
S Schizophrenic
N Neurotic

centages of each of the groups on the total weighted Hughes scores. Table XI shows the significance of the differences between the proportions of the groups making specific scores in the organic sign battery considered diagnostic by Hughes. It may be observed (Table X) that only six percent of the post-traumatic group scored 7 or higher as compared to none in either of the other groups. This score is most insignificant in the present data (Table XI) despite the fact it was taken as the diagnostic criterion of organic pathology by Hughes. Thirty-eight percent of the post-traumatic patients scored three or higher as compared to 22 percent of the schizophrenic patients and 22 percent of the neurotic patients. Again, Hughes considered a score of 3 to 6 as "possibly organic." It may be seen in present data (Table XI) that 30 percent of the post-traumatic group scored in this range as compared to 22 percent of the schizophrenic group and 22 per cent of the neurotic group. The differences were not significant (Table XI). Thus, in the present data only three post-traumatic cases would be correctly identified as "definitely organic" on the basis of Hughes' scale, and only 15 post-traumatic cases as "possibly organic." On the other hand, 11 schizophrenic and 11 neurotic patients would be identified as "possibly organic."

Hughes diagnosed cases having a score below 3 as "not organic." The present results (Table XI) show 62 percent of the post-traumatic group scoring below 3 as compared to 78 percent of the schizophrenic and 78 percent of the neurotic groups. No significant differences appear here.

Thus it may be seen that on the basis of Hughes' criteria, only 19 or 38% of the post-traumatic group

TABLE XI—Significance of the Differences Between the Proportions of the Groups Making Specific Scores on the Hughes' Organic Sign Battery.

				P-T—S			P-T—N			S—N		
	P-T	S	N	Diff.	P	High	Diff.	P	High	Diff.	P	High
Score	%	%	%	%			%			%		
7 or more	06	00	00	06	.08	P-T	06	.08	P-T	00	1.0	....
3-6	32	22	22	10	.08	P-T	10	.08	P-T	00	1.0	....
under 3	62	78	78	16	.09	S	16	.09	N	00	1.0	....

Key

P-T Post-traumatic
S Schizophrenic
N Neurotic
Diff. Difference between proportions
High Group showing higher proportion
P Probability value

TABLE XII—The Proportion of Each Group Showing the Presence of Each of the Hughes Signs Indicating and Contra-indicating Organic Involvement, the Differences Between the Groups, and the Reliability of the Differences.

	P-T	S	N	P-T—S			P-T—N			S—N		
Pattern	%	%	%	Diff %	P	High	Diff %	P	High	Diff %	P	High
<15R	34	24	14	.10	.28	P-T	.20	*.02	P-T	.10	.21	S
<25R	78	56	60	.22	*.02	P-T	.18	.06	P-T	.04	.69	N
<2M	58	54	52	.04	.69	P-T	.06	.55	P-T	.02	.85	S
Cn	20	8	10	.12	.09	P-T	.10	.17	P-T	.02	.73	N
<2FC	82	70	66	.08	.25	P-T	.16	.07	P-T	.24	*.01	S
Persev.	46	64	42	.18	.08	S	.04	.69	P-T	.22	*.03	S
Plx	26	0	2	.26	*.001	P-T	.24	*.001	P-T	.02	.32	N
AP	16	0	2	.16	*.01	P-T	.14	*.02	P-T	.02	.32	N
C Shock	80	52	64	.28	*.01	P-T	.16	.08	P-T	.12	.23	N
Sh Shock	70	74	64	.04	.66	S	.06	.53	P-T	.10	.29	S
FM>M	58	64	70	.06	.54	S	.12	.22	N	.06	.53	N
Conf. Succ.	36	2	6	.34	*.001	P-T	.30	*.001	P-T	.04	.31	N
Contam.	16	38	4	.22	*.02	S	.12	*.05	P-T	.34	*.001	S

Key

Diff. Difference between the groups
P Probability value indicating the significance of the differences between the proportion of the groups.
High Group showing higher proportion
* Significant at .05 level or better
P-T Post-traumatics
S Schizophrenics
N Neurotics

are correctly identified as organic or possibly organic, and 39 or 78% of the schizophrenic group and 39 or 78% of the neurotic group are correctly identified as not organic.

We may study the proportions of the groups giving each of the Hughes' signs in Table XII. We note, for example, that 82 percent of the post-traumatic patients showed less than 2 FC, 80 percent color shock, 78 percent less than 25 responses, etc. We note also that less than 30 percent of the group showed signs Cn, Plx, AP, and Contamination.

TABLE XIII—Hughes' Signs for the Evaluation of Organic Involvement Presented in Rank Order Based Upon Frequency in Each Group.

Pattern	P-T (n = 50)		S (n = 50)		N (n = 50)	
	f	%	f	%	f	%
<2FC	41	1	45	1	33	2
C Shock	40	2	26	7	32	3.5
<25R	39	3	28	5	30	5
Sh Shock	35	4	37	2	32	3.5
<2M	29	5.5	27	6	26	6
FM>M	29	5.5	32	3.5	35	1
Persev	23	7	32	3.5	21	7
Conf Succ	18	8	1	11	3	10
<15R	17	9	12	9	7	8
Plx	13	10	0	12.5	1	12.5
Cn	10	11	4	10	5	9
A.P.	8	12.5	0	12.5	1	12.5
Contam	8	12.5	19	8	2	11

Key
P-T Post-traumatic
S Schizophrenic
N Neurotic

The differences between the proportions of the groups showing specific Hughes' signs may also be seen in Table XII. Comparing the post-traumatic group with the schizophrenic group, it may be seen that significantly more of the post-traumatic patients than schizophrenic patients gave less than 25 responses, Plx, AP, C sh, and Conf Succ, and fewer showed contamination, reliability at the five percent level or better. Again, significantly more of the post-traumatic group than the neurotic group gave five signs—less than 15 responses, Plx, AP, Conf Succ and Contamination at the five percent level or better. Thus, four of the Hughes' signs reliably distinguished the post-traumatic patients from both the schizophrenic and neurotic patients. These included Plx, Ap, Conf Succ, and Contamination. It may be observed too that in comparing schizophrenic patients with neurotic patients, significantly more of the schizophrenic group gave less than 2 FC, Persev, and Contamination.

In Table XIII we study the rank order of the Hughes' signs based on frequency of occurrence in each of the three groups. It may be observed that the sign given with greatest frequency by the post-traumatic and schizophrenic groups was less than 2 FC. The sign given with the greatest frequency in the neurotic group was FM greater than M, but the next in frequency was the less than 2 FC. Thus, the sign less than 2 FC appears to rank high in all of the three groups. The signs which ranked the highest for the post-traumatic group were less than 2 FC, C sh, less than 25 R, and Sh shock. These signs also ranked highest among the neurotic group. Of these, only two signs, less than 2 FC and Sh shock ranked high among the schizophrenic group.

It may also be noted that the lowest ranking signs for the post-traumatic group were less than 15 R, Plx, Cn, AP, and Contamination. Four of these, less than 15 R, Plx, Cn, and AP ranked low among the schizophrenic group. Four, Plx, Cn, AP, and Contamination also ranked low among the neurotic group. Thus we note again that while some of the Hughes signs differentiated the post - traumatic group from the schizophrenic and

neurotic groups, many of them occurred with great infrequency in the post-traumatic group and, hence, their usefulness is curtailed.

Summary

1. Hughes' differentiating criteria of a score of 7 or more and 3-6 are invalid when applied to the present post-traumatic group.

2. Significantly more of the Hughes' signs, less than 25 R, Plx, AP, C sh, Conf Succ, and Contamination differentiate the post-traumatic from the schizophrenic and neurotic groups, but they occur with such infrequency that they cannot be relied upon as exclusive differentiating criteria.

3. Adhering to Hughes' criteria, in present study, only 6% of the post-traumatic group scored 7 or higher, 32% scored between 3 and 6, and 62% below 3. Thus only 6% would be diagnosed correctly, and 32% would be called probably organic. Again 62% of the group would be incorrectly diagnosed on the basis of Hughes' criteria.

4. Hypothesis two has been proven correct. The Hughes' signs are not fully diagnostic, are insufficient in themselves to differentiate a group suffering from post-traumatic encephalopathy from a group of non-organic neurotic and psychotic patients.

Conclusion

It is concluded that while five or more of the Piotrowski signs may reflect organicity, they tend to occur in a very small proportion of patients suffering from post-traumatic encephalopathy. Absence, therefore, of the Piotrowski signs in a record is not contra-indicative of organic pathology. It is further concluded that Hughes' criteria of organic defect are not valid when applied to a post-traumatic group. They cannot be relied upon for diagnosing post-traumatic encephalopathy. It would appear that this sign approach in itself is not sufficient to diagnose organic defect. No doubt it is necessary to emphasize the descriptive and qualitative aspects of the Rorschach record as well as the quantitative. A report of the analysis of these records taking a more global and configurational approach will be given in a subsequent paper.

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Toward an Understanding of Projective Testing [1,2]

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This is being written in Salzburg, where life goes its quiet and charming way.[3] The people greet you with "Grüss Gott" and seem genuinely interested in being helpful, yet without being insistent on getting into your affairs. They seem to have a deep understanding of things. Complex problems dissolve into petty and unimportant trifles. Can you imagine what fine psychotherapists such people could be—or are?

Perhaps it is because of this atmosphere that I seem to see more clearly than one might ordinarily what the hue and cry concerning projective testing, and especially projective theory, is all about in the United States. The distance from the States may help; but more than that, the tranquil and sobrietous surroundings help most. The psychologists I've talked to in Austria, and to a considerable extent those in other parts of the continent, accept projective testing for what it surely is—a *developing* technique of fundamental and persistent importance in the history of psychology and social science.

Back in the States the critics of projective testing are growing more numerous as well as more clamorous. Empiricism asks, "What is the objective validity of your projective instruments?" The skeptics complain of amorphous, unsubstantial methodology, of the "craftiness" of the projective tester. Some of the statisticians have convinced themselves via factor analysis or chi-square tests, or what not, that what they always thought is surely true—projective testing has no business keeping company with "respectable scientists."

Last summer I had the privilege of reading E. L. Kelly's careful and thorough chapter on assessment which he was preparing for the *Annual Review of Psychology,* at about the time the manuscript was being sent to the editors. His survey revealed pitifully few studies in which the correlations between predictions from projective tests to criterion data were statistically significant. This finding cannot be dismissed. On the contrary it must be carefully and *appropriately* considered. The fact cannot be denied that projective tests in these studies failed, for the most part, to be useful as significant predictors. One hasty conclusion which many readers will easily reach is to discard projective tests. Another conclusion which many clinical psychologists, who are trying to identify themselves with objective psychology, will reach is that the projectivists had better disengage themselves from their difficult position and try on the mantle of objective testers.

I am reminded of the wave of reaction to Freudianism—the ill considered, complexly-begot reaction that it was valueless or that it was at least mystical. If not that, it was

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[1] Delivered as a Presidential Address to the Michigan Society for Projective Techniques, November 7, 1953.

[2] Submitted for publication in The Journal of Projective Techniques.

[3] While the author was in Europe, an excellent discussion of some of the issues dealt with in this paper appeared: Miller, D. R. Prediction of behavior by means of the Rorschach test, *J. abnorm. soc. Psychol.,* 1953, *48,* 367-375.

at least un-objective! And above all, it was surely of no consequence, so it had best be ignored. And when that wasn't possible any longer, it seemed best to condemn it, without mercy, without temper—and of course, without adequate thought. Yet Freudian theory and concepts have made a deep, lasting, and apparently highly significant impression on psychology—on learning theory as well as on genetic psychology—and on the social sciences broadly as well as on psychology itself. However, even today there are *some* psychologists who refuse to recognize its existence — and, of course, this condition is more widespread in some related disciplines such as sociology and anthropology.

Projective testing, too, is meeting the same kind of resistance, for it is founded on the same philosophical basis, i.e., that *all* human behavior is somehow rooted, although affected more or less by other factors, in *unconscious* processes. And since people, some at least, are uncomfortable in dealing with their own unconscious, they are likely to be unduly and "unscientifically" aroused when other people insist upon dealing with it.

Yet it is surely true that projective testing has a far less firm rooting in theory than does Freudian doctrine. And, possibly because of this, some projectivists are unwilling to admit limitations, are resistant to important and relevant criticism, and make their claims all the more uncautiously. They swagger all the more since they fear inwardly lest their untested convictions be inspected too closely.

On the other side, many projective studies whose intent it was to examine some predictive possibilities of projective instruments, were conceived out of profound ignorance of projective theory and so were doomed to ignominious and well-deserved failure. Others, giving little thought to the critical problem of finding *acceptable* criteria against which to test predictions came to the same fate. Still others, using poor experimental methodology, attempted inappropriate tests, not being aware of implicit assumptions which their studies were making.

All of the last mentioned set of three factors: underlying theory; suitable criteria; and acceptable methodology will have to be taken into account in evaluating experimental studies of projective tests. But it is to the first of these three problems, namely, projective theory, that I should like to direct some simple observations. I do not expect to add anything startlingly new in this discussion, but I hope to underline several important considerations.

First of all, one must consider the *nature of projection,* and particularly the projective test situation (10).

As we all know, projection, in the primary and classical sense in which Freud defined it, is an *unconscious process* in which the individual *unconsciously* attributes to external objects characteristics which are not integrally a part of those objects (4). Thus, we never observe projection, the process, directly; we can only observe its end products: the distortions, condensations, enlargements, transpositions, symbolisms, etc. These products, to be understood for the particular individual doing the projecting, must be interpreted in terms of the symbolic derivatives of the universal projective process.

The *projective testing situation* adds some additional variables to the *composite* product of the projective process. Let us consider first

the relationship between the subject who is being observed and the person who is doing the observing (8). We must never forget that this situation is always an *interpersonal relationship,* no matter how much the observer tries to render himself neutral. While, in practice, we tend to discount the effects of this relationship upon the end product, and we may, perhaps, do so with greater justice when we are analyzing results for certain group situations, we *know* as a matter of both clinical and experimental investigations, how significant the effect of the interpersonal relationship may be in certain individual instances (2, 12). This should not surprise us, for the effects of transference are well known (5). The amount and kind of projection which takes place in a projective testing situation is *always* a function of this relationship. It may be encouraged (through decrease of the ego's censoring function), discouraged (through the same mechanism), and *selectively altered,* on the basis of the subject's unconscious as well as conscious reaction to the observer's *personality* and his *overt behavior. Personality* includes all of the characteristics of the observer, such as attitudes, moods, defenses, and the like, as well as gender, dress, manners, etc. We still have a great deal to learn about how to take this interpersonal situation into account in interpreting projective test results, and how much or how little of its effect is significant with different types of projective test instruments (3, 7, 9).

Now let us consider the *subject,* the organism doing the projecting, as he comes into the testing situation. First of all, there is the underlying reservoir of unconscious material which he brings with him. Let us consider this a constant, for the moment. How much and what kind of unconscious material is *available* in the subject is a function of his unique life history, and varies, for him, with the points in his life space at which he is tested. *His* conflicts, his defenses, his cultural and educational history as well as his physical mechanism can influence the "type of unconscious" which he has (3). These same conditions, which also effect his *conscious* and *preconscious* processes, influence the conditions under which *the products of his unconscious can emerge into the test situation.* Hence his *subjective* attitudes toward the testing situation, in brief, the *nature of his motivation* for the test may be of crucial importance for what his ego *permits* to emerge from his unconscious. A few theoreticians have discussed this particular phenomenon, but unfortunately, clinicians and experimentalists alike seem to have taken it into account far too little (1, 13).

Then we must consider the *stimulus* which is being utilized in the projective test situation. A great deal of attention has been paid in the literature to the *results* achieved with various test stimuli: the Rorschach, the TAT, the Szondi, the Bender-Gestalt, for example, but very little work has as yet been done on the theoretical import of the nature of the stimulus material itself. Rorschach (11) saw the fundamental significance of this problem and it led him to consider the general type of stimulus which might assist unconscious processes to assert themselves, i.e., to outwit the censor; it also led him to considerable experimentation with varieties of the particular type of stimulus which he finally decided upon. As I have pointed out in a previous article (6), it is useful to categorize types of projective stim-

uli into three major classes: unstructured; partially structured; fully structured. The Rorschach clearly belongs to the first of these categories, for the subject must organize it into uniquely meaningful products; it is, of course, true that there is no "pure" unstructured stimulus. Nevertheless, the nature of Rorschach stimuli is such that it is likely to require, more than any other stimuli we know of, that the subject utilize unconscious processes in producing a response. He may censor his responses, to be sure, and he most certainly does, but he is not likely to be aware of what he is, in fact, revealing.

Now Rorschach's genius went further than to discover important test stimuli. He also contributed a basically new approach to the analysis of the response. Perhaps he underestimated, at least in the beginning, the value of the manifest and symbolic content of the response, but he did psychology the notable service of devising a procedure for getting at the *organizational* aspects of the unconscious product. Surely this is what the analysis of *determinants* means. We have, as yet, gone very few steps beyond this fundamental beginning of Rorschach's, and a great deal needs to be done in this area. For, I believe, that research directed at the most promising theoretical leads for the analysis of the organizing process particularly as it operates with unstructured test stimuli, is one of the main keys to understanding and interpreting the unconscious – possibly, I think, more promising than dream analysis.

And here I should like to digress briefly to point out a fundamental issue which is apt to be lost sight of. Other types of test stimuli, such as the TAT (a partially-to-fully-structured set of test stimuli) may gain access to the unconscious, particularly if analysis is made of structure and process, *not* content, but these other types of stimuli will probably prove less helpful in getting at the deeper levels of the psyche. This is a point which is open to speculation and to research. I am merely attempting to indicate my own orientation. If I may be permitted a rough analogy, the more clearly the stimulus is of the structured category, the more clearly will the response be determined, in large measure by conscious and preconscious processes; the *more* it will be like interview material and the less like dream material! While *all* types of response may be analyzed for both conscious and unconscious determinants, the unstructured stimulus is likely to produce unconscious responses of "purer" quality.

This digression leads us easily into the final aspect of the projective test situation: the response. Once we have it, what do we do about it? Methods of response analysis in psychology are legion. I wish only to emphasize one issue, namely: any method which fails to take into account inter-action among the variables is *not apt* to be p r o d u c t i v e of meaningful aspects of the unconscious (14). Here again, Rorschach's genius offered invaluable leads, in his insistence upon consideration of the *total balance* in the psychogram. Perhaps we can find more objective and even more effective methods for the analysis of the psychogram, but we should never forget its theoretical premise: like the organism, so the response is *not equal* to the sum of its parts.

In concluding, I must apologize for the necessarily sketchy quality of this paper. I would have liked to have developed some of the is-

sues at greater length and with greater clarity. I do hope my remarks will have the effect of helping you to re-think some of the perplexing issues which constantly beset the projective clinician. And perhaps, there will be more understanding of the plethora of research studies concerning projective tests, some of which, like their authors, were conceived out of uncertain theoretical heritage.

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Group Rorschach Responses of Thirty-five Leprosarium Patients

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All of the adjectives in the English language would fall short of conveying a word-impression of the utter isolation of the Kalaupapa peninsula, jutting from the windward side of the Hawaiian Island of Molokai. Sheer cliffs, two to five thousand feet in height drop to the sea. A tiny leaf-shaped bit of land, only 10 square miles, lies at the bottom of these cliffs, surrounded on three sides by the stormy Pacific ocean. On this peninsula is located the Kalaupapa Leprosarium.[3]

Once a week a supply ship approaches the island. It cannot dock. If the seas are not too high, supplies are ferried to the island by small boats. An airplane lands daily carrying newspapers, patients, some supplies; but it cannot bring mail because by federal law, all mail in or out of the settlement must be carried by burro up and down the sheer cliffs. At the time this study was made, a civil administrator, not the medical director, would determine, for example, whether a leprous adolescent girl would live in a cottage with her leprous parents or would be housed in a dormitory for females.

By geography, by law, by administrative policy, the patients of Kalaupapa Leprosarium were isolated from normal freedom to live where and how they wished. All of these restrictions were a result of a physical disorder which usually in no way diminished the average patient's zest for life, which rarely made him feel ill, no matter how grossly the disease disfigured him.

In the population of Kalaupapa, one can see persons whose whole lives are dictated by a physical disorder which isolates them from a free society and confines them to a small geographical area inhabited by others similarly diseased and similarly isolated. Although a sincere effort is made to provide normal lives for the patients, with movies, sports, church, clubs, and a modicum of self-government, one cannot help wondering what, if any, personality changes are brought about by this disease-enforced restriction and isolation to colony living.

During the spring of 1949, the writer had occasion to examine five maladjusted adolescent patients of the leprosarium. Their period of residency ranged from 6 months to 6 years; their ages ranged from 15 to 19 years; their Intellectual Quotients, from 74 to 98. On the Wechsler Bellevue sub-test on Picture Completion, the raw scores ranged from 8 to 11 with a mean of 9.2. The surprising point, however, is that every one of the adolescents failed on Item 1, the missing nose. Why? Speculating, one notes that Hanson's disease, until recently a

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[2] The statements and conclusions published by the author are the result of her own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

[3] Since this study was made, the Kalaupapa Leprosarium has been closed. Patients have been moved to a less isolated location near Honolulu on the island of Oahu.

tragically disfiguring disorder, frequently causes most gross disfigurement in the nasal area. Had these adolescents, daily confronted with missing or grotesquely disfigured noses, ceased to perceive noses? Ceased to miss a missing nose? What other alterations in perception might exist? What other unusual adjustments might the patients have made to their illness and the subsequent isolation? Questions of this nature stimulated the present study.

SUBJECTS

Thirty-five patients, representing 13 per cent of the total patient population of the Kalaupapa Leprosarium, served as the subjects for this study. All of these were ambulatory patients, not hospital cases. A few had been medically discharged but preferred to remain in the settlement because their disfigurements precluded a comfortable adjustment in the outer world. There were 27 males and eight females. They ranged in age from 9 to 44 years with an average age of 25.3 (Table I); in period of

TABLE I—Age Distribution

Age	f
9 - 10	1
11 - 15	4
16 - 20	9
21 - 25	6
26 - 30	4
31 - 35	4
36 - 40	3
41 - 44	4
Total	35
Mean	25.3

residence on the peninsula, the range was from 3 months to 20 years, with an average of 8.6 years, a median of 9.5 years. It should be noted that, at the time of this study, life expectancy, following onset of Hanson's disease, was 18 years.

PROCEDURE

All ambulatory patients were invited to attend a lecture and film on mental health. Following the program, the patients were invited to remain to participate in an experiment. A pencil and mimeographed form were offered to each. The subjects were told that a study was being made to determine whether any differences exist between groups living in large communities such as Honolulu and small communities such as Kalaupapa.

The recording form was composed of 5 legal-size sheets of paper, a half sheet for each Rorschach card. There was space for recording three concepts for each card. Ten determinants were listed[4], preceded by spaces for numerals; space was provided for adding non-listed determinants. Slides of the Rorschach Ink Blots were projected on a screen, and the patients were instructed to record whatever the blot suggested.

The slides were again projected in sequence; this second time, the patients were told to decide what about the blot made them think of their first concept on Blot I, to place a numeral 1 before that determinant. They were told to place an underlined 1 before any other determinant that helped suggest the concept. Determinants for concept No. 2 were indicated by the number 2, and so on.

The procedure invited up to three free associations to each blot. While blank spaces were provided for listing determinants not printed, the very existence of the listed ten determinants provided structuring of the choices. *What* the patients saw, we may call unstructured pro-

[4] Shape, shapeless, smooth, rough, soft, furry, black, color, moving, hanging.

jected concepts; *how* they saw these concepts, we must call semi-structured determinants, both main and additional.

Thirty-nine completed record forms were returned to the examiner. Four of these were so illegible that they had to be excluded from the study. It will be remembered that Hanson's disease not infrequently leaves patients with few, if any, fingers with which to write.

Results

Tables II and III show the distribution of results by cards. In round figures, there were an average of 14 responses to the Ink Blot Test. Three and a half of these were popular responses. Movement responses averaged one M, 2.5 FM, and one main Fm plus one Fm additional. The total use of K, small and large, was so meagre as to render averages approximating zero. Of 484 responses, there were only two K, one main FK plus three additional, and one additional Fk. There were an average of four F, two main Fc and two additional, and .3 c. There was an average of one C′, plus two additional per record. All C′ were black. Sum-C total was 1.0, with one FC plus .5 additional, .5 CF, and no pure C. One card rejection per record forms a part of this composite-average protocol, and there is an average of one anatomical response. Other concept categories included an average of 1.5 Human, .1 Human detail, 7.3 Animal, .1 A-detail, 1 A-object, 1 object, and 1.7 other miscellaneous concepts.

Other mean measures are 28 F%; FK+F+Fc = 45%, 54 A%; P = 3.5; H+A to Hd+Ad = 8.8 to 2; M to sum C = 1 to 1; FM+m to Fc+c+ C′ = 4.0 to 3.5; and 31% R on the all-color cards.

Discussion

The unfortunate lack of a control group of cases in this study seriously limits the inferences or conclusions one may make from the data. However, there is a mass of information on the responses to the blots given by the populations of the larger communities. Against this background, we may place the data from the Leprosarium and consider similarities and differences.

By conventional methods of interpretation, the composite Psychogram evolving from the foregoing data suggests diminished creativity with possible regression to a more primitive, ego-centric, intellectual orientation, accompanied by some tension. There is a suggestion of a reduced capacity for thinking in line with usual community thought. There is no measurable evidence of anxiety, but there is some evidence of heightened sensitivity accompanied by a diminution of emotionality.

The C′ determinant is of particular interest. By actual count, 33 of the 484 concepts were determined primarily by their blackness, and an additional 74 were partially determined by blackness. The 107 reactions to black were quite evenly distributed among the subjects, only 4 of the 35 records failing to include this determinant. Furthermore, even Card VIII, a so-called "all-color" card, elicited "Black" as a main concept determinant three times, additional once. This despite the fact that black was placed seventh on the list of determinants. This finding, coupled with an absence of spontaneous C′-white and S-responses, and the paucity of total responses, suggests that the use by these subjects of this achromatic determinant does not indicate simply a utilization of all available stimuli

TABLE II—Distribution of Main and Additional Determinants by Cards

Card	*M*		*FM*		*m*		*Fk*		*K*		*FK*		*F*		*Fc*		*c*		*C'*		*FC*		*CF*		*C*	
#	*M*	*A*	*M*	*A*	*M*	*A*	*M*	*A*	*M*	*A*	*M*	*A*	*M*	*A*	*M*	*A*	*M*	*A*	*M*	*A*	*M*	*A*	*M*	*A*	*M*	*A*
I	0	0	5	0	5	9	0	0	0	0	0	0	22	0	15	4	1	0	5	9	0	0	0	0	0	0
II	5	0	17	0	2	0	0	0	0	0	0	0	12	0	6	4	0	1	5	12	1	2	0	1	0	0
III	12	1	11	0	4	3	0	0	0	0	0	0	16	0	6	9	1	0	4	12	1	0	0	0	0	0
IV	0	0	2	2	11	3	0	0	0	0	0	0	12	0	16	5	1	0	8	9	0	0	0	0	0	0
V	0	0	15	0	4	3	0	0	0	0	1	0	20	0	9	11	2	0	6	17	0	0	0	0	0	0
VI	0	0	2	0	7	9	0	0	0	0	0	0	7	0	15	5	2	0	0	8	0	0	0	0	0	0
VII	10	0	5	0	4	4	0	0	2	0	0	1	7	0	6	9	1	0	2	6	0	0	0	0	0	0
VIII	0	0	10	0	4	4	0	1	0	0	0	0	10	0	2	9	1	2	3	1	8	4	9	0	0	1
IX	2	0	3	0	2	3	0	0	0	0	0	0	7	0	3	7	2	0	0	0	13	3	6	0	1	1
X	3	0	23	1	4	3	0	0	0	0	0	2	24	0	1	8	0	0	0	0	8	6	2	0	0	0
Total:	32	1	93	3	47	41	0	1	2	0	1	3	137	0	79	71	11	3	33	74	31	15	17	1	1	2
Mean:	.9	.03	2.7	.09	1.3	1.2	0	.03	.06	0	.03	.09	3.9	0	2.3	2.0	.3	.09	.9	2.1	.9	.4	.5	.03	.03	.06

TABLE III—Distribution of Content, Total and Popular Responses, and Rejections

Card	*R*	*P*	*Rj*	*H*	*Hd*	*A*	*Ad*	*A obj*	*At*	*Obj*	*Other*
I	53	12	3	4	0	23	1	0	8	4	13
II	48	9	4	7	0	37	0	0	2	1	1
III	55	13	0	21	0	23	0	1	4	2	4
IV	50	9	1	0	3	17	0	10	2	14	4
V	57	26	1	0	1	53	1	2	0	0	0
VI	33	14	7	2	0	3	0	17	0	10	1
VII	37	0	7	11	1	11	2	0	1	3	8
VIII	47	11	4	0	0	21	1	1	9	5	10
IX	39	0	5	3	0	14	0	0	6	0	16
X	65	27	3	5	0	53	0	0	1	1	5
Total:	484	121	35	53	5	255	5	31	33	40	62
Mean:	13.9	3.5	1.0	1.5	.1	7.3	.1	.9	.9	1.1	1.7

but rather a pervading depression unaccompanied by feelings of resistance—perhaps a resigned depression.

The high frequency of animal concepts, 54 per cent, indicates a narrowed range of interests, a restriction of relationship with life in general. This finding may be related to the low frequency of human concepts, which suggests, as a part of this total composite protocol, a withdrawal from relationships with human beings.

We find one anatomical response per record as an average for the 35 records. While such responses are not usual, and always excite special interest, one might have hypothesized a number even higher than the obtained average of one anatomical out of 14 responses considering the special population of this study. Interest centers around the specific cards which provoked anatomical responses. Only Cards V and VI failed to elicit such concepts. In order of frequency, the most provocative cards were VIII, I, IX, III, II and IV, VII and X. There was no correlation between length of residence and incidence of anatomical responses, such concepts ranging from none to three at both extremes of the residence scale. No single record contained more than three such concepts.

Rejections of cards are always considered abnormal and, therefore, significant, in Rorschach protocols. Our subjects rejected an average of one card per record, or a total of 35 failures to respond at least once to a card among our 35 subjects. The range of rejections was from 0 to 3. Again, one is interested in the specific cards most frequently rejected by our subjects. Both cards VI and VII elicited 7 rejections; other cards, in descending order of highest frequency, were IX, II and VIII, I and X, IV and V. No one of our 35 subjects rejected card III. It is not too easy even to speculate on the frequency of rejection of Card VII, the so-called "Mother-figure" card. Possibly the subjects were reacting to their common knowledge of the theory that leprosy is contracted through long intimate exposure during infancy and childhood, hence is believed most frequently to be contracted from the mother.

We may offer some possibilities for high incidence of rejection of card VI, the so-called "Sex Threat" card. At the time of this study, there was a rather rigid effort, on Kalaupapa, to control extra-marital heterosexual relationships. On the other hand, marriage between patients was allowed, and frequently practiced. However, within-marriage variations from normal family orientation existed. No child could be born on the Kalaupapa peninsula. Pregnant women were delivered of their infants in the receiving hospital for lepers in Honolulu on the island of Oahu. Furthermore, an infant was taken from his leprous mother at birth, to be placed in a foster home; the childless mother was then returned to her "family," to the Kalaupapa Leprosarium. Possibly this medically essential procedure is a sufficient deviation from normal sex-related human family concepts to contribute to an understanding of our finding of high frequency of rejection of Card VI; possibly it also explains, in part at least, the high incidence of rejection of the "Mother-Figure" card.

Summary and Conclusions

Thirty-five patients, resident at the Kalaupapa Leprosarium of Hawaii, were given a group Rorschach test. The composite average

protocol of the group suggests that some personality modifications are a concomitant of Hanson's disease and its resultant enforced isolation of patients from the larger social community.

The most unusual, but hardly unexpected, deviations from normal protocols, were 35 card rejections and 33 anatomical responses. Other data suggest a tendency toward reduction of productivity, restriction of both intellectual and emotional life, limitation of interest range, and a decrease in so-called "popular" thinking; there is also a tendency toward increased sensitivity and depression.

Rather than being struck by these observed deviations from the norm, however, one is more likely to be impressed by the relatively healthy over-all picture the composite protocol presents. These data would seem to reflect a certain flexibility and adaptability of the human personality when confronted with rather extreme, long-standing physical and environmental stresses. The tuberculous patient in a sanatorium bears similarity to the leprous patient in that he is also frequently ambulatory, often zestful, and is isolated from the larger social community because of his physical disorder. A review of the literature related to the personality of the tuberculous in a sanatorium gives a complex, conflictful picture of personality concomitants of this disease. Nevertheless, through the studies there seems to run a common finding: hypochondriasis and depression greater than normal expectancy.

Considering our results in the light of these other findings, one would hesitate to infer that specific personality deviations may be associated with Hanson's disease, *per se*. However, one may hypothesize that a physical disorder which leads to isolated colony living will lead to personality distortions of the sort reflected in this study. If this hypothesis is tenable, then corrective procedures lie as importantly within the realm of applied social psychology as within the area of therapeutic clinical psychology.

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Projective Movement Sequences in the Study of Personality [1]

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Evaluating the differential selectivity among projective tests is a recent area of interest in research with projective methods. As is true for all tests the goal we set for the subject is a function of the stimulus materials employed together with the kind of instructions given to him. In projective testing such factors would conceivably play an even more important role in determining individual perceptions. Studies dealing with systematically varying the projective stimulus (11, 12) and others attempting a greater elaboration of specific stimuli (1) have become more numerous. As a contribution to the investigation of the effect of different stimuli upon perception, this report will present material obtained by the use of a motion picture projective device, the Projective Movement Sequences Test, (PMS) (5).

The PMS like the Rorschach test is semi-structured and ambiguous. Responses must be made to the continuing relationships suggested by the film, and call for a different kind of organization and interpretation than is necessary when responding to static stimuli. The general class of phenomena subsumed under all Rorschach movement responses might therefore be made more accessible by providing motion in the stimulus itself. Techniques of analysis and interpretation of PMS protocols will be presented so as to understand the effect of such a film upon personal associations.

POPULATION

Twenty-five patients diagnosed as Schizophrenia, Undetermined Type, and a like number of Paranoid Schizophrenics and "well adjusted" controls were individually tested. The patients were chosen to meet the following criteria: agreement between psychologist and psychiatric staff regarding diagnosis, exclusion of the feebleminded and those with organic brain diseases, inclusion of only white patients tested before beginning treatment.

Controls were chosen to match the pathologic groups for socio-economic level (all groups fell between the Lower-Lower and the Lower-Middle Classes as defined by Warner (10), age, and education. They are designated "well adjusted" because social criteria were employed to screen out individuals who appeared to deviate from their group in terms of job, marital, or health history. The design was such that variables which might inordinately influence the results were either reduced or excluded. Data relating to sex distribution, as well as other characteristics of the sample are found in Table I.

DESCRIPTION OF THE PMS

The technique of photographing the sequences has been described, as has the choice of the eight sequences used in the technique (6). Briefly, the sequences are not accidental patterns, and a number of

[1] Based upon a dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Northwestern University. The general supervision obtained from Dr. Thomas W. Richards, and the statistical aid given by Dr. John Cotton is gratefully acknowledged.

TABLE I—Identifying Data for the Three Groups

Population Variables	Diagnostic Groups								
	Undetermined			Paranoid			Control		
Males	8			6			11		
Females	17			19			14		
	Mean	Sigma	Range	Mean	Sigma	Range	Mean	Sigma	Range
Status Index	59.4	5.67	39-68	49.8	7.04	49-70	57.4	9.25	43-67
Age	32.6	8.15	21-50	36.8	8.56	18-55	31.4	6.76	19-55
School Years	10.7	4.90	7-17	9.8	2.36	6-14	10.4	2.50	5-16

TABLE II—Certain Characteristics of Each PMS Sequence

Sequence	Proj. Time (seconds)	Figure	Ground	Lighting
I	20.00	black	white	flat
II	55.50	white	black	flat
III	44.25	black	gray	flat
IV	32.75	white	black	flat
V	30.50	white	black	bright left side
VI	31.50	black	white	flat
VII	31.00	black	white	flat
VIII	31.25	white	black	diffuse side

TABLE III—The Gestalt Impression of Each PMS Sequence

Sequence	Gestalt Impression
I	smooth, slow, gliding, warm, floating.
II	impulsive, hesitating, immanent, pulsating, slow, bristling, erratic, impersonal, continuous with element of sporadic movement.
III	combination erratic and smooth wavy motion, pulsating and slow, abrupt but steady and constant for the most part, slow and personal.
IV	floating, light—almost gay, rhythmic for main body with projective separation, slow with last part jerky, intermittently continuous and sporadic with increasing speed.
V	rapid immanent pulsations, fleeting, gross, impulsive bristling or flashing with rapid almost bizarre movement, fleeting and sporadic, somewhat explosive, jerky, discontinuous, impersonal.
VI	periodic, partial, sporadic, lethargic, hesitant, slow, discontinuous.
VII	sluggish, slow almost straining, bending, deliberate, still, rigid, lethargic, Balinese-like.
VIII	turbulent, impression of big wind, darting, gross and flashing, quick and flashy, expressive as a Spanish dance, erratic.

lighting and other effects were used while magnetically manipulating the black powdered iron filings out of which the test was constructed. Table II lists technical data about the sequences, and Table III the gestalt impressions of each sequence given by four psychologists who have worked with the test.

METHOD OF ADMINISTRATION

The test was individually administered by projection of the film at 16 frames per second with a standard 16 mm. projector. Subjects respond to one sequence at a time in accordance with the following instructions, or a paraphrase thereof:

I am going to show you a movie made up of eight short scenes or sequences. You will see one scene at a time. Watch it carefully. When the first scene is over, I will stop the projector. Then I want you to tell me what you saw going on in the movie. Tell me just what you saw and what was happening. Do not say anything until the scene is over. We will do the same thing for each of the eight scenes; watch it first, then tell me what you saw there and what was happening.

The spontaneous associations of the subject were clarified by an inquiry held immediately after each response in order to obtain more precise information about what was actually seen, the direction of movement, and the factors responsible for motion.

Discussion of Results

All scores are entered on the scoring sheet reproduced in Table IV. The protocol is analyzed to obtain material about its structural organization and its dynamic content. These factors will be explained along with a presentation of their occurrence among the three groups tested.

FM (flexor movement). The motion of any object whose ultimate direction is determined by a centripetal force. The force may be physical or psychological in nature. Physical forces would include gravity, any type of suction, swallowing, or sucking. Psychological forces would imply any attraction among two or more objects, or any turning in toward the self on the part of one object.

EM (extensor movement). The motion of any object whose ultimate direction is determined by a centrifugal force. The force may be physical or psychological in nature. Physical forces would include expulsive processes, explosions, disintegrative processes (except where gravity is the major cause of disintegration). Psychological forces would include any need leading to an outgoing movement on the part of the object.

Examples of the three movement directions have already been given

Table IV—Projective Movement Sequence

Name..... Age..... Date.....

Seq. No.	MOVEMENT LEVELS I	II	III	IV	Ch	DIRECTION DM	FM	EM
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								
RATIOS:	/ / /					/ /		

Direction of Movement

Three scores make up this dimension, defined and presented below.

DM (diverse movement). The motion of any object whose direction is primarily random or inconsistent; circular, back and forth, pulsating, wavy, in and out.

(7). Within each sequence more than one direction might be present; all are scored. *FM* and *EM* scorings imply a clearly stated goal. *DM* scores reflect two sub-types: (1) some objects are seen to move in a diverse manner because of various physical or psychological circumstances, where the object could just as well move in an *EM* or *FM* manner under other conditions, (2) the movement of objects may be inherently random, such as leaves drifting in the wind, organs pulsating, or objects carried along by accidental fluctuations of water. While the two subtypes are not scored as such, their psychological meanings appear to be quite different.

Group results for movement direction scores are indicated in Table V, where the predominant direction has been tallied for each subject. The chi square[2] indicates a trend which may offer a lead in seeing the structure of the paranoid as closer to the controls than to undetermined schizophrenics. The use of the *FM* category at the expense of *DM* among the undetermined group is in line with the withdrawal of energy from the environment so often found in schizophrenics.

A study reported by Thetford (9) who investigated Rorschach *M* responses among children and adolescents is pertinent here. His finding that adolescent schizophrenics see more flexor *M* is in line with our own results.

Tentative hypotheses regarding movement direction naturally suggest themselves during the course of clinical use of the PMS. Extensor movement suggests a turning outward of energy, and a reacting *with* the environment. Although extensor movement is the predominant type for all groups investigated (current research confirms this fact) we can differentiate two methods of environmental interaction, the realistic and unrealistic. Thus some individuals distort reality even though their energies are directed away from themselves, and while they too emphasize extensor movement it appears that more of their fantasies are of the disintegrative and uncontrolled kind.

Expressions of anxiety and of conflicts which are not yet resolved seem to be reflected in the diverse movement score. The actual level of anxiety, however, is also contingent upon the amounts of other movement directions in the record. One could predict therefore that individuals who show high amounts of diverse movement (especially of the type of object which is not inherently diverse in behavior), and a relatively low amount of extensor and flexor movement, would exhibit more generalized anxiety than persons of the two following types: (1) high diverse and high extensor and flexor, (2) high extensor and flexor, and low diverse.

TABLE V—Predominance of Movement Direction Among the Three Groups

	Direction of Movement			
Groups	DM	FM	EM	Total
Control	8.5	3	13.5	25
Undetermined	3.5	8	13.5	25
Paranoid	7	3	15	25

Chi Square = 5.74 df = 4 P = .20

The application of *t* tests to determine possible sex differences in

[2] Chi Square is used here as an overall test for interrelationship between types of movement and type of diagnostic category in preference to an overall *F* test because *F* would involve three measures per subject, and the assumption of independence of successive measures may not be met.

TABLE VI—Change of Concept Data*

	Undetermined		Paranoid		Control	
Sum	60		147		38	
Range	0 - 8		0 - 20		0 - 4	
Mean	2.40		5.88		1.52	
Sigma	2.29		5.11		1.24	
	Male	Female	Male	Female	Male	Female
Mean	2.62	2.29	4.00	6.61	1.63	1.42
Sigma	2.64	2.07	4.21	5.17	1.29	1.20

* This data is based upon the untransformed scores.

movement direction scores yielded negative results.[3]

Change of Concept

This score is simply a tally of the occurrence of concept changes found within all sequences.

ch (Change of Concept) When more than one form or function is seen for the same object during the course of any sequence concept change is scored. The numeration of separate objects all present in the same sequence aren't scored however. The emphasis here is on the variation of form or function within the same structure. There should be a true form difference.

The following examples will make clear the use of the concept change score:

Small caterpillars or bugs.

Looked like fish . . . could also be a barber's shears shearing hair.

Head of a deer, footprints, leaves, stones, brilliant stones.

It's probably what it is. I heard a lady say sperm cells and that's what it is . . . Also maybe ova, egg cells.

First thing was, starting of a fly —didn't seem right so it looked like a bunch of leaves.

Looked like a rooster . . . or a dog.

The breaking off of a turkey leg. The beginning of the picture looked like the portion of an old old dried out tree in a forest.

This looked like one of two things. Either an enormous piece of cotton . . . It even had a cloud-like substance . . .

Differences between the diagnostic groups are listed in Table VI. These differences, employing a necessary transformation of scores,[4] are significant at beyond the .01 level.

Sex differences were also tested by means of *t's* [5] and results when all three diagnostic groups were combined proved to be negative. However, in comparing sex differences *within* each sample, as reported in Table VI, it appears that the paranoid group would show a true difference.

[3] The *t* test is indicated because our interest is in sex differences category by category, and is legitimate inasmuch as the *N's* are large enough to permit the assumption that the distribution of means would be normally distributed in accordance with the central limit theorem.

[4] The test of mean differences was performed using *F* since there is no categorization of response which would permit chi square. The proportionate mean and sigma values indicate the use of Bartlett's test for homogeneity of variance. The positive result of this latter test necessitates a log transformation of the original scores. The *F* test after transformation indicates overall significance at beyond the .01 level.

[5] The *t* test is indicated here because our interest is in overall sex differences taking the three groups together. Normal curve functions were used to determine *P*, and sums of squares were computed separately.

Concept change appears to be related to two elements: (1) perceptual rigidity and an inability to tolerate ambiguity, and (2) confusion in sex role identification. The second hypothesis is currently being tested by categorization of objects in the concept change pairs into male, female, and bisexual symbols. Since it has been shown that female paranoids respond with the greatest amount of concept change we would predict that concept change, wherever it occurred, would reveal greater sex symbolism change than would be expected by chance alone.

To test the hypothesis of perceptual rigidity a pilot correlation between frequency of concept change and Rorschach $F\%$ on 19 paranoids used in the present sample revealed a pearsonian r of .324 and a probability of .05 that the correlation is significantly greater than zero.[6] Our prediction of a positive correlation between these two factors was borne out. The $F\%$ was chosen since a number of Rorschach investigations (3, 4) indicate that a high $F\%$ is associated with an inability to tolerate ambiguity, i.e., people who are form bound. These individuals are further described as rigid, pedantic, and compulsive. Subjects who have tendencies toward compulsivity and rigidity of thinking cannot find the best form for describing an object on the PMS since the stimulus is in constant motion and must be judged memorially. This can lead to a successive number of alternative objects being named and to the phenomenon of concept change. The same individual when presented with a static stimulus can consciously or unconsciously reject associations until he finds one which makes the best fit for him, i.e., the least threatening and least anxiety provoking. This latter type of behavior would lead to an increase in $F\%$, and hence the inflexibility and rigidity which many times characterizes these people.

Movement Level

It is possible to make a detailed analysis of the objects seen in motion in terms of the source of energy for the motion. What does the subject assume to be the motivator for the object's movement? Since motion is inherent in the PMS sequences the subject is simply called upon to provide a rationale for movement. At present we have isolated four alternatives for explaining motion, indicated on the scoring sheet by the columns labeled I through IV, and referring to the following:

I. Internal source of energy: The locus of energy is within the object. This can be broken down into two subtypes, volitional and non-volitional.

a) Volitional: Objects move under the internal pressure of a need or desire. The element of a more or less conscious control over movement is implied. Thus this category would include only human and animal percepts, as well as one labeled as animate.

b) Non-Volitional: There is an absence of conscious control since consciousness is not a quality of the objects subsumed under this category.

II. External source of energy: The locus of energy for the object's movement is external to it. Some other force or object causes its movement.

III. Static: The stimulus is in motion but its movement is denied

[6] The suggestion for conceiving of the change of concept score as reflecting a phenomenon akin to form boundedness as expressed in high $F\%$ was proposed by Mr. Boris Breiger of this Department.

in the subject's response.

IV. Disintegrative: The object loses its ability to keep itself integrated, relinquishes internal controls, and falls apart. This can occur through an external destructive force or through an internal disintegrative process. Disintegrative processes include death, wasting away, falling apart, decaying, bodies coming apart (arms, legs, or heads falling off), objects being destroyed or killed, etc.

It is felt that the Internal-Volitional and Disintegrative categories represent two arbitrary ends of a continuum of personality integration. Theoretically therefore, all statements concerning an object in motion could be placed at some point along the continuum of integration-disintegration. All varieties of content must fall under one or more of the four types of movement. In Table VII the means for males and females in the three groups are presented, as well as overall means. While the nature of the data make it difficult to apply meaningful significance tests it is feasible to regard Table VII as indicative of trends.

All three groups give greatest weight to internal energy sources, and within that category to volitional movement. The groups are fairly similar with respect to external energy sources. In the static movement category undetermineds and controls are quite similar, while paranoids see more. Compared with the two pathological groups the controls see the least amount of disintegrative movement.

A comparison of sex differences indicates that female paranoids tend to distribute their movement level scores in a manner resembling that of the control males, a result consistent with analytic findings that the female paranoid characteristically exhibits a great amount of masculine protest, is aggressive, masculine in her approach to the world, and reveals much sexual confusion in personal as well as social roles in society. Predictions in this area would lead one to expect higher ratios of disintegrative movement among pathological groups, and greater emphasis of internal energy sources (especially in animal and human content)

TABLE VII—Movement Level Means for Total Groups and Sex in Each Diagnostic Group

Movement Level	Group	Controls	Undetermined	Paranoid
Internal Energy	M	3.95	3.56	2.91
	F	3.82	3.21	4.26
	M & F	3.88	3.32	3.94
a) Volitional	M	4.90	5.25	2.66
	F	5.00	3.94	4.42
	M & F	4.96	4.36	4.00
b) Non-Volitional	M	3.00	1.87	3.16
	F	2.64	2.47	4.10
	M & F	2.80	2.28	3.88
External Energy	M	2.72	3.00	5.16
	F	3.64	3.76	2.89
	M & F	3.24	3.52	3.44
Static	M	1.36	1.62	2.33
	F	1.93	1.53	2.21
	M & F	1.68	1.56	2.24
Disintegrative	M	.91	2.87	2.33
	F	1.78	1.76	2.42
	M & F	1.40	2.12	2.40

among neurotic and normal groups.

The distinction is made between volitional and non-volitional movement with volitional movement felt to be the highest level of integration. Non-volitional movement would still indicate control but of a different quality than the volitional type: the control functions of non-volitional movement are felt to be reflections of automatic mechanisms operating within the personality, not under conscious control but nevertheless still serving as integrative elements in an almost reflex manner. On the other hand we conceive of external energy levels as reflecting a tendency toward loss of control, conscious as well as reflex.

Objects moving because of outside forces appear to reflect personality elements responsible for the more uncontrolled and infantile behavior patterns, although these may not necessarily be pathologic. The third level, static movement, is thought to represent factors of inhibition and immobilization operating within the personality, and can also be thought of as indicating a blocking of affect associated with strong mechanisms of denial and repression. Finally, the disintegrative level represents blatant pathology, and is expected to reach a peak in severe personality disorders. Disintegrative movement reveals a complete loss of control and a renunciation of integrative capacity in the face of unresolvable conflicts.

The assumptions regarding the psychological significance of the movement levels have been listed above in the form of testable hypotheses. One point must be made explicit however: as for any other projective analysis, these quantified measures are studied best in the framework of patterns of response, rather than isolated scores. The question is not that some people will be lacking in one or more of these variables, but that individuals and groups will differentially emphasize the scoring variables.

Content within Movement Levels

We can differentiate a number of mutually exclusive content areas. These are quite familiar to any worker with projective materials and require only brief descriptions. Examples are given below where necessary.

1. Human
2. Animate – Any object upon which is projected human or animal-like qualities. Ordinarily this would include botanical or inanimate content to which has been imputed life-like qualities. It also subsumes animal content to which has been imputed human characteristics.
3. Animal
4. Botanical
5. Physiological – This category has proved to be necessary to distinguish certain life processes from the human and animal areas. It includes: cells dividing, germs, diseases spreading, shedding skin, sores on the body, heart beating, blood flowing, defecation, laying eggs, birth.
6. Nature – This category subsumes what would be considered both natural as well as geographical occurrences. Examples are: storms, earthquakes, sun's rays, ocean waves, flowing rivers, fog, clouds, meteors, birth of planets, snow storms, volcano erupting, land masses moving, islands, oceans, lakes, maps.
7. Chemico-Physical – The category includes man made events as bombs, electrolysis of water, fuses burning, certain fires when not associated with natural events, fireworks, sky rockets, molten metal in furnaces, the action of magnets.

8. Machines – Included here are all types of man made machines.

9. Inanimate – All objects not fitting under either of the eight other categories are included here. By definition these objects would all be non-living and incapable of self movement.

In scoring the protocol, the appropriate content designation, one of the nine above is entered under the movement level (internal, external, static, disintegrative) which defines its quality of motion. We might enter "Human" under internal energy if the subject states that he sees two people fighting, and enter again under the disintegrative category if he continues as follows, ". . . and then it seemed that the person on the right came apart . . ." It should be clear therefore that the number of content elements in any story will be a function of the changing quality of motion, and the theme of the story can make use of all four movement levels.

It is conceived that all content, with the exception of inanimate, occurs naturally under the motivation of internal energy sources, including nature, physiological, botanical, chemico-physical, and machines. It is only when forces external to the object are acting upon it that one of the three other movement levels would be employed as follows: trees being blown, individual A pushing individual B, an animal falling, a ball being

TABLE VIII—Content Distribution Within Movement Level in Terms of Frequencies

Movement Level	Content Categories	Control	Undetermined	Paranoid
I. Internal Energy	Human	42	28	29
	Animate	18	35	13
	Animal	67	46	59
	Botanical	8	6	8
	Physiological	13	27	50
	Nature	26	9	19
	Chemico-Physical	13	10	15
	Machines	1	4	2
II. External Energy	Human	5	7	1
	Animate	7	3	4
	Animal	5	7	6
	Botanical	30	15	18
	Physiological	1	1	2
	Nature	1	0	2
	Chemico-Physical	0	0	0
	Machines	0	1	0
	Inanimate	33	55	53
III. Static	Human	13	7	8
	Animate	11	10	15
	Animal	4	5	3
	Physiological	0	0	5
	Nature	1	3	3
	Chemico-Physical	0	0	0
	Machines	0	0	1
	Inanimate	12	14	24
IV. Disintegration	Human	7	10	10
	Animate	2	5	1
	Animal	8	12	20
	Botanical	7	9	10
	Physiological	2	1	2
	Machines	0	0	0
	Inanimate	7	10	10

thrown, feathers floating, people or animals standing still (where there is movement on the screen), or any object disintegrating.

Results of the differential use of the nine content categories among the four movement levels is presented in Table VIII, where the frequencies only are given. Here too it was felt that no statistical technique could materially add to the trends observed by inspection. Many categories contain few entries and since the groups are relatively small it was felt that all the data should be presented. The limitation of speaking only in terms of frequencies is obvious, and it should be remembered that discussions regarding differences are not based upon statistical evidence and are merely suggestive.

In the internal energy level controls see more human content than either of the other two groups, as they do natural occurrences. Controls are also high in botanical content for the external energy level, as they are in human content in the static level.

The undetermined schizophrenics are distinguished by their emphasis of animated figures. Compared with the controls they also respond with more physiological content in level I, internal energy. They select inanimate content to a high degree under both external energy sources as well as disintegrative movement.

The paranoid group is notably distinguished by its use of physiological content, to a degree far greater than either the undetermineds or the controls. They too stress inanimate content in the external energy and disintegrative levels compared with the controls, and similarly as the undetermineds. However the paranoids are further distinguished by their emphasis upon animal content.

It would appear that these content categories could well have diagnostic significance. If true such a result is at variance with what has been found for the Rorschach and the TAT, and might best be explained by the unusual nature of the PMS stimulus, and by the s e e m i n g l y highly personalized themes elicited by such a stimulus.

It appears that certain constellations of content do characterize one group more than others, and that in some respects groups are alike in their use of content categories. As the range of associations becomes more focused because of the suggestive nature of the stimulus it appears that subjects have lower thresholds for responding with more personally determined percepts. Thus we find that paranoid schizophrenics focus a great deal of their energy upon associations of a physiological type, that undetermined schizophrenics place emphasis upon inanimate content, and that normals emphasize botanical content more than either of the two pathological groups. However, the question of diagnosis from content does not appear to be primary and any interpretation of projective research solely in terms of diagnosis is bound to be theoretically abortive. Content variability is therefore conceived of as providing indices for an understanding of ideation, and leads directly into formulations at a more gestalt level, namely, the isolation of themes as exemplified by Symond's recent work with adolescent fantasies (8).

Content Selectivity among Sequences

In assigning tentative interpretive indices for the eight sequences it is necessary to know how they

are conceived by groups of subjects, and to determine if pathological groups place the same general content interpretation upon the sequences as do the controls. A comprehensive analysis appeared previously (6), and a summary of those findings will be indicated here.

It can be concluded that some of the eight sequences have a fairly specific meaning for the populations tested. The paranoids and controls "see alike" more often than do the undetermineds and either of the two other groups. It is also felt that an absence of content of a particular type on specific sequences has psychological meaning for any individual protocol. In the most general terms we can characterize the sequences as follows: the "human" sequence is number VI; the "animate" are numbers III, V, and IV; the "animal" are I, III, and IV; the "botanical" are III, VII, and I; the "physiological" are IV, II, and VII. No sequences can be said to elicit inanimate content more than others.

Sensitivity of the PMS for the Three Groups

The ability to interpret any projective technique rests in part upon the amount of material the test is able to elicit. If the nature of the stimulus is such that it imposes greater difficulties for association upon one group than upon another it can be said to be loaded against equally predictive and valid conclusions for all groups tested. Stated in another way, are our interpretations based upon inferences about what is not said to a certain stimulus or about what the subject does tell us? While both methods of interpretation are used by many workers in practice, we eventually face the question of testing the validity of second and third order inferences.

The dynamic material in a protocol is imbedded in its content. The content analysis ultimately leads to an isolation of themes. Although this report has not concentrated upon theme analysis, it has presented material concerning varieties of content. The frequency of content and movement directions for the three groups reveals that the PMS stimulus imposes no differential hardship upon any of the groups.

Anal Themes Related to Paranoid Schizophrenia

An example of directly interpretable material will now be given, and comes close to a theme analysis in which we have abstracted from all content categories those statements which fall into *only* the following types: mud, dirt, bowel movement, feces, intestines with something inside. The percentages, means, and frequencies of such anal material have already been presented (16). Our interest is in the presence or absence of anal content as defined above. Using a chi square contingency table presented in Table IX highly significant differences are found.

TABLE IX—Presence of Anal Content among Individuals in All Three Groups

	Saw Anal	Did Not See Anal	Totals
Controls	5	20	25
Undetermined	6	19	25
Paranoid	19	6	25
Totals	30	45	75

Chi Square = 20.33 df = 2 P = .0007

It is apparent that significance is due to the higher amount of anal content seen by the paranoids, lending support to the psychoan-

alytic interpretaton of paranoid thinking being related to an anal level of psychosexual development. Fenichel states the position as follows:

"When the development of the libido leads to an overcathexis of the excretory functions, these functions, too, may be used as physical models for projection. To get rid of an objectionable object or impulse by removing it from the body is a very frequent fantasy. In paranoia, the disease in which projection reaches its greatest height, this fantasy achieves its climax in persecutory delusions in which the persecutor outside the patient represents the sensations he feels in his bowels" (2, p. 147).

To determine the strength of the relationship between anal content and paranoid thinking a phi coefficient was obtained, using a fourfold chi square contingency table. Such a table is constructed by combining the undetermined and control groups, and appears justified inasmuch as anal material is assigned a prominent role in the development of a paranoid picture, and is not necessarily an important component in the etiology of the undetermined schizophrenic. Proceeding as outlined above a chi square value of 27.38 was found and a phi coefficient of .604, producing an approximate value of .95 in terms of a pearsonian correlation. It can be demonstrated therefore that a high relationship exists between paranoid thinking and anal content.

SUMMARY

Some results obtained through the use of the Projective Movement Sequences Test have been presented. The study was essentially normative and explorative, although a number of hypotheses stemming from it were formulated. Two schizophrenic and one normal group, totaling 75 individuals comprised the population: group data revealed differences in the scores related to concept changes, varieties of content, and energy locus for objects in motion. Direction of movement indices confirmed results already obtained on the Rorschach test.

It is deemed possible to make intensive content analyses of the projective data, a procedure carrying us a step further than a strictly "sign" or factor approach. Growing out of content material an example of a theme interpretation of "anal" content was given which indicated the general sensitivity of the technique.

The motion picture stimulus is felt to be a feasible method to employ in the further understanding of personality functioning. Its ultimate contribution has perhaps not been adequately covered in the above presentation. Examples of the actual fantasies have not been given since this was not our intent at the present time. The highly personalized nature of subjects' responses to the PMS is one aspect of the technique which does emerge quite clearly however with even a cursory inspection of the protocols. Finally, it is felt that the analysis undertaken of the structural elements found in the protocols is a necessary preliminary to any more qualitative approach which might be attempted at a later date.

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Examiner Influences on Thematic Apperception Test Stories [1]

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While there is abundant evidence that the projective techniques, such as the Thematic Apperception Test (TAT), are successful in measuring the individual's enduring, or typical, motivational states and personality dispositions, a number of recent studies have demonstrated that the fantasy protocol is also a function of transitory, situational personality reactions. In recent years considerable attention has been focused on the critical examiner-subject relationship as a factor influencing the fantasy processes of the subject. One of the first experiments bearing on this problem is the one reported by Bellak (2) in which he found that sharp criticism and disapproval of the examinee's productions resulted in increased aggression and other changes in subsequent stories. Other studies relating to the problem of the examiner's influence on the fantasy productions of his subjects are those by Baughman (1), Gibby, Miller, and Walker (4), Kenny and Bijou (5), and Lord (7). Further discussion and a comprehensive survey of the literature in this area may be found in a recent article by Lindzey (6).

PROBLEM

In view of previous research, the hypothesis was advanced that responses to the ambiguous pictures in the TAT would vary systematically in relation to various attitudes expressed by the examiner during the administration of the test. More specifically, the present study was an attempt to predict certain differences in the protocols of three groups of subjects, each group treated exactly alike except that in the administration of the test the examiner expressed a negative, hostile attitude toward one group, a neutral, business-like attitude toward the second group, and a positive, friendly attitude toward the third group. The following predictions were advanced:

1. There should be a consistent variation in story length between the three groups. The positively treated group should produce the longest stories, the negatively treated group should produce the shortest stories, and the neutral group should produce stories of an intermediate length between the other two. This is based on the oft-stated assumption that good rapport is essential to the free expression of fantasy material, and that threatening situations tend to inhibit fantasy production.

2. There should be a positive relationship between the attitudes of the examiner and the attitudes manifested in the stories. The story heroes of the negatively treated group should view their respective environments as essentially hostile and threatening. The story heroes of the positively treated group should view their environments as more friendly and accepting. The neutral group should occupy a central position with respect to this variable. This is based on the assumption of a direct correspondence between the press of

[1] Abstract of master's thesis sponsored by Dr. Sidney W. Bijou, University of Washington, 1952.

the examiner's role and the projected press in the stories.

3. The amount of anxiety manifested in the story heroes should vary with the degree of threat imposed by the examiner. The negatively treated group should project the most anxiety into their story heroes; the positively treated group should project the least anxiety; and the neutral group, again, should occupy an intermediate position with respect to the amount of anxiety projected.

Method

Subjects

In all, 36 male subjects were used. They were recruited on a voluntary basis from introductory courses at the University of Washington during the summer of 1951. All soliciting of subjects and scheduling of appointments was accomplished by an assistant who was uninformed as to the experimental conditions to which the subjects would be exposed. And since the subjects were not seen by the examiner until they appeared for their scheduled appointments, randomization was accomplished by assigning them to their respective groups in serial order as they appeared for testing.

Materials

Three cards from the TAT were used: Cards 1, 7BM, and 20. These were selected from those specified for male subjects. Other than this, no selection criteria were used. Order of presentation was varied systematically.

Procedure

From the moment he knocked on the testing room door each subject was treated in accordance with the examiner attitude, or "role", to which he was assigned. The achievement of each role objective by the examiner was to a large extent dependent upon his sensitivity and spontaneity in relation to each individual subject. Nevertheless, it was felt that a certain amount of consistency and uniformity of each role could be achieved through the use of preestablished devices and procedures. These are presented in detail in the original thesis. Only a brief description is presented below.

Neutral examiner role. The examiner will attempt to administer the test in an efficient but routine manner, remaining noncommital in relation to the subject's feelings and attitudes. Since this role is to furnish the base line for comparisons, the examiner will attempt to refrain from expressing either positive or negative feelings toward the subject.

Positive examiner role. The examiner will attempt to allay any tensions or negative feelings and attitudes in the subject and will attempt to elicit instead as much positive affect as possible. He will be as accepting, courteous, and friendly as possible, giving support and praise, and attempting to make the testing situation as comfortable and pleasant as possible for the subject.

Negative examiner role. The examiner will attempt to be as demanding, rejecting, and threatening to the subject as possible. He will deliberately try to provoke and aggravate feelings of tension and discomfort.

Treatment of Data

Story length. The evaluation of story length was accomplished by a simple word count.

Attitude measure. The evaluation of the attitude of the hero in the story was accomplished through the use of an unpublished

scale developed by Bijou and Kenny. It is a nine-point bipolar scale with positive attitudes at one end and negative attitudes at the other. At the positive extreme the story hero feels that his environment is completely helpful, facilitating, accepting, pleasant, loving, desirable; at the negative extreme the story hero feels that his environment is extremely frustrating, punishing, harmful, dominating, friendless, undesirable, threatening, and inhibiting. The middle category applies to those cases in which no dominant attitude is discernable.

Anxiety measure. The amount of anxiety manifested in the story hero was evaluated by means of a scale developed by the author. It is a five point scale ranging from "no anxiety" to "strong anxiety." Anxiety is defined in two ways: (a) the narrator of the story may state directly that the story hero is anxious, nervous, tense, worried, etc., and/or (b) the story hero may be described as being in a state of conflict, ambivalence, doubt, etc. The relative strength of anxiety was judged in part by the degree to which the story hero was incapacitated by it.

Stories were recorded by means of a concealed microphone, and typescripts were then prepared and coded for presentation to the raters. The three raters used were all graduate students in psychology who had completed the courses in projective techniques, and who had had some experience in the interpretation of the TAT in hospital or clinic settings. No special instructions were given to the raters except the usual technical ones.

RESULTS

Reliability

The average reliability coefficient between raters for the attitude scale was found to be .79, and for the anxiety scale .74. The estimates of the reliabilities of these averages, by means of the Spearman-Brown prophesy formula, are .92 for the attitude scale, and .90 for the anxiety scale. The ratings of the three raters were then pooled to obtain the mean rating for each story on each of the two scales. These average ratings constitute the scores used in all further statistical analysis of the results of the experiment with respect to attitude and anxiety.

Intercorrelations

Story length and attitude correlated .30, significant at the 1% level, the longer stories being associated with the more negative attitudes. The correlation between story length and anxiety was found to be .18, significant at the 5% level. The amount of anxiety was found to correlate .52 with the attitude toward the story press, again significant at the 1% level, the more negative attitudes being associated with the greater amounts of anxiety.

Analysis of Variance

The factorial design used in the present study for the analysis of variance is similar to that discussed in Edwards (3, pp. 237-63). An analysis of the variance due to the three main variables, roles, cards, and orders, as well as the first and second order interactions of these, was computed for each of the sets of scores for story length, attitude, and anxiety. Where significant F-ratios were obtained, mean differences were further analyzed by means of the t test of significance. Limitations of space prevent the presentation of the data for cards and orders. It may be mentioned, however, that significant differences in the attitude and anxiety

measures, but not in story length, were found between cards, and that no differences were found between orders of presentation. For further discussion of these data the interested reader is again referred to the original thesis. Only the data relevant to the main hypothesis, that is, the difference between examiner role groups, will be discussed in detail here.

Table I shows the mean scores of each of the examiner role groups for story length, attitude, and anxiety. Variance due to the examiner roles was found to be significant at the 1% level for all three measures.

TABLE I—Mean Scores, Standard Deviations, and Variance Ratios for the Examiner Role Groups

(Higher attitude scores signify more positive attitudes)

Story variable	Examiner role							
	Positive		Neutral		Negative			
	Mean	Sigma	Mean	Sigma	Mean	Sigma	F*	P
Length	159.53	72.42	112.48	47.62	162.80	95.60	5.91	<.01
Attitude	4.73	1.71	4.54	1.82	3.43	1.99	5.41	<.01
Anxiety	2.34	.89	2.43	.93	3.02	1.11	5.89	<.01

*F is the ratio of the variance between groups to the pooled variance within groups.

Story length. It may be seen that the positive and negative role groups produced stories of approximately the same average length, while most of the difference in story length is attributable to the neutral group which produced stories much shorter than the other two groups. The *t* ratios between the neutral and positive groups and between the neutral and negative groups were both significant at the 1% level, while the difference between the positive and negative groups was not significant.

Attitudes. The attitudes projected by the positive role group were found to be more positive than those of the other two groups, the attitudes of the neutral role group were only slightly less positive, and the negative role group projected by far the most negative attitudes. The *t* ratio between the positive and neutral groups was not significant; between the positive and negative groups and between the neutral and negative groups the *t* ratios were both found to be significant at the 1% level.

Anxiety. The least anxiety was projected by the positive role group; the most anxiety was projected by the negative role group; the neutral role group projected anxiety of an intermediate amount. While the positive and neutral groups did not differ significantly, the differences between the positive and negative groups and between the neutral and negative groups were both found to be significant at the 1% level.

On the basis of the numerous significant differences that were found, together with an inspection of the original data, the following comparative descriptions of the stories of the three groups may be made.

1. The subjects who were treated in a positive, friendly manner by the examiner produced long, well elaborated stories. Their

story heroes displayed little hostility or aggression, experienced little anxiety, and when in trouble were able to turn to others for help and guidance. The heroes manifested predominantly positive feelings and attitudes. Some conflicts were shown, but they were as a rule mild and transitory. Other characters, making up the story press, were perceived as friendly and facilitating.

2. The subjects treated in a neutral, business-like manner by the examiner produced stories that were short and to the point, meeting but not exceeding the requirements of the test instructions. Their heroes tended to experience mild emotions or none at all. Anxiety was minimal and conflicts were quickly and conventionally resolved. Thus the stories by this group were more mechanical and perfunctory, and less revealing, than those of the other two groups. They were more objective and efficient in complying with the reality requirements of the testing situation, and were less free with their feelings and creative processes.

3. The subjects treated in a negative, hostile manner by the examiner frequently left out story elements and tended to show negativism when questioned for them. The most severe perceptual distortions occurred in this group, and this group was the most critical of the content and quality of the pictures. In spite of these specific omissions and distortions, this group produced long and complicated stories. Their heroes frequently came into conflict with other story characters, showing strong hostility and aggression. Anxiety was the most severe in the heroes of this group. Sometimes they would fight and destroy others, while at other times, filled with bitterness and resentment, they would withdraw from the social structures, finally becoming depressed and suicidal. No such extreme reactions were projected by the other two groups.

DISCUSSION

It is clear that the main hypothesis of the experiment, that responses to the ambiguous pictures in the TAT would be influenced in certain respects corresponding to the affective tone imposed on the testing situation by the examiner, has been supported by the results of this experiment.

With respect to the specific hypotheses of the experiment, it was predicted that the negative group would produce the shortest stories on the assumption that threatening situations would tend to inhibit fantasy production. Instead the neutral group produced by far the shortest stories, while the negative and positive groups produced stories of approximately equal length. This finding seems to indicate that the arousal of affect, regardless of whether it is positive or negative, tends to complicate the story-telling process. The complication, however, appeared to be of a different sort for each of these groups. One interpretation might be that some subjects in the positive group, feeling warmly accepted and appreciated, were eager to extend the situation by giving elaborate stories. Others may have simply felt secure enough to indulge their creative processes at great length. The negative group, on the other hand, projected a great deal of anxiety, hostility and aggression into their stories and it seemed that long, involved stories were needed in order to control and channelize such threatening impulses and feelings.

As shown above, the predictions as to the distributions of hero attitudes and the amount of anxiety manifested in the story heroes have been substantially born out by the experimental results.

The various relationships found to obtain in this experiment suggest that the hero-press interdynamics in TAT stories tend to approximate the subject-examiner interdynamics in the testing situation. If this impression is correct, techniques similar to those employed in this study might be profitably used along a number of research frontiers and may be found helpful in clarifying a number of the problems in the fields of diagnostic testing and psychotherapy.

Summary

It was predicted that (a) subjects treated in a positive, friendly manner by the examiner during the administration of the TAT would produce long stories in which the heroes would manifest comparatively positive attitudes and low anxiety, that (b) subjects treated in a negative, hostile manner would produce short stories in which the heroes would manifest comparatively negative attitudes and high anxiety, and that (c) subjects treated in a neutral, business-like manner would produce stories intermediate with respect to length, quality of hero attitudes, and amount of hero anxiety.

Significant differences were found in support of nearly all of these predictions with the major exception that the subjects treated in a neutral manner produced by far the shortest stories, while the negatively and positively treated groups produced stories of equivalent length.

A marked tendency was noted, within the limits of this study, for the hero-press interdynamics in the stories to approximate the subject-examiner interdynamics in the testing situation.

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The Rorschach Method As An Experimental Instrument: Review [1]

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The Rorschach Method is a comparatively standard procedure for eliciting responses from subjects in a clinical setting. If it is to be useful as an experimental instrument, however, it must be shown that, independently of the clinical judgment of the investigator, the Method, both as a whole and throughout the separate categories, has reliability and validity. It is the studies purporting to demonstrate these attributes of the Method with which this review is concerned, and not those relating Rorschach results to disease entities.

Validity: General Considerations

Many investigators using the Rorschach Method assume that its validity and reliability have been adequately demonstrated. Unaware or unconcerned that the situation is little improved since the early observations (4, 71) that Rorschach practice rests almost entirely on empirical grounds, they ignore the fact that few of the working hypotheses have been confirmed experimentally. Regardless, they use the Rorschach Method to demonstrate the validity of a diagnosis made by other means (1, 8, 61, 63); or conversely, claim validity for the Rorschach Method when this description correlates highly with other empirically derived methods (11, 25, 32, 41, 42, 46). Unfortunately, these other methods have not been validated either but are, like the Rorschach, dependent on empirical conclusions derived from clinical or medical practice (26, 35, 50, 52, 73). Such circular reasoning does not provide a scientific basis for assuring that the personality evaluation derived from the Rorschach Method is any more a function of the diagnostic properties of the test than the clinical judgment of the examiner. Until the basic validity of the scoring categories individually and their use in patterns is determined, the success of the Method as a whole cannot be attributed only to the test (54, 67).

It has been demonstrated that the results are fundamentally altered when obtained by different administrators and interpreters (6, 21, 30, 33, 68), when the Rorschach Method (71) is applied by less experienced technicians, when the subjects are not in rapport (39), or when the test instructions are varied (3, 31, 49). Because the Rorschach Method is subject to such extraneous variables, it will be difficult to establish its validity.

Further, the statistical procedures used in most Rorschach validation studies (14) have been so inadequate as to raise the question whether the conclusions can be accepted at all. The majority of these studies used the inappropriate measure of group averages in examining the validity of the Rorschach Method. Such statistical procedures violate the basic intent

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of the Rorschach Method on two counts. First, since the intent is to employ patterns of scores, then appropriate statistics (13, 15, 22) for pattern tabulation should be applied. Second, in validating a diagnostic procedure designed to specify the usefulness of the test in an individual case, the appropriate statistical technique to be applied, in nearly all instances, is a chi-square analysis demonstrating in what proportion of cases the test achieves its stated purpose.

Added to these problems of administration and analysis of the test are those which arise in scoring of the categories. Different scoring systems have been developed, elaborating on and departing from some of Rorschach's categories. Although they are comparable in general terms, the specific definitions, particularly for the shading and movement responses and for some of the location scores, vary considerably (7, 48), making difficult direct comparisons of scoring in one system with that in another. In addition, the categories range from well defined and objective concepts such as reaction time, number of responses, whole response, space response and popular response, to such subjective and loosely defined concepts as shading shock, color shock, perplexity and impotence. This variation in objectivity leads to lack of agreement when the categories are scored by different investigators and precludes an analysis of the categories themselves.

It should be pointed out, however, that many Rorschach studies are unconvincing not so m u c h from weaknesses inherent in the Rorschach Method as from faulty design in the experiments themselves. Studies carried out with no control groups, and others failing to control such important psychological variables as intelligence or social class are not uncommon. Generalizations from such restricted studies are often unjustified. Frequently the Rorschach Method is compared with other procedures designed for a different purpose (16); such a comparison should not be expected to yield valid conclusions. The lack of clarity in current psychiatric nosology has also contributed to the general confusion. While most investigators have been careful to select their groups according to diagnosis, there has been frequent neglect of such major considerations as clinical status (acute, arrested, improved), course (episodic, chronic), phase (excited, retarded) and degree of disorder (preserved, deteriorated). Thus, while some of the fault is inherent in the Rorschach Method, much of the criticism is more appropriately directed at the many investigators who have failed to employ adequate experimental methods.

Validity: Specific Aspects of the Rorschach Method

Adequate norms for n o r m a l groups are only beginning to be provided (5). The few other studies (12, 43) of normal subjects clearly indicate that the generalized concept of an "ideal normal protocol" referred to in texts and in the literature will have to be revised.

A fundamental assumption of the Rorschach Method is that different individuals will perceive the inkblots differently (10). A means of testing this assumption was provided early (56), but not until recently was it demonstrated (40) that individuals with different personality structures do perceive the inkblots differently and that perception is related to personality. On the other hand, it may be that

different people perceive the cards similarly but react to their perceptions in a different way (69). However, it still remains to be shown that the relationships between the perceptions, or the reaction to them, and personality are those claimed for the Rorschach scoring categories.

Although it has been stated (57, 60, 72) that color in the Rorschach may be related to a general color factor and both to emotionality and to maximal autonomic arousal under stress (36), there are many studies (9, 37, 38, 44, 51, 59, 64) which question this evidence in demonstrating that color per se is not the sufficient factor leading to shock in the chromatic cards. However, the color variable has been shown to have measurable effects on reaction time, the conceptual responses and memory (65). There is some indication that the response to color may be differentially affected by lesions localized at different places in the brain (17).

Few of the other scoring categories have been tested for validity. The movement response (M) elicited by the Rorschach is also elicited by another independent measure of movement tendencies (58) and is related to laboratory tests of behavior implied in the M (62). Form level (F+%) and number of responses (R) are clearly shown to be related to personality structure (40). More specifically, form level, has been shown to be a valid estimate of "control" (2, 74); though more recently this has been questioned (20). Content analysis (18, 77) also seems to be a fairly valid differentiating factor. Thus, while the validity of some of the scoring categories has been demonstrated, validity of most of the Rorschach scores has not been established.

It is not surprising then, that statistical analyses and experimental study of the configurations or patterns of scores have generally been disappointing (70, 75, 76, 77). Some convincing arrangements of the scoring categories have been devised (17, 45, 47, 53, 55) for specific purposes, but there is a pressing need for the development of others and for a redefinition and rigorous test of the validity of those currently in use. A factor analysis approach (77, 78) has been used with some success. It has been pointed out (33) that it is now necessary to correlate such composite scores against predicted external criteria.

RELIABILITY

In general, the question of the reliability of the Rorschach Method has received little attention. And yet, if the test is to be acceptable it must be capable of giving the same results at all times. A basic assumption of the method is that it reveals basic personality structures and is uninfluenced by temporary situational factors. However, recent studies (27, 31, 49) question this assumption and show that temporary situational factors may be reflected in the test and may obscure the basic personality of the individual.

Early workers (28, 71) could only report dubious reliability for the Rorschach Method even when every effort was made to elicit high reliability. Highly suspect methods and inadequate statistics do not improve this situation though they (23, 24, 29, 34, 66) purport to show the stability of some of the personality factors. However, it has been claimed recently (19) that twelve of the Rorschach factors yield test-retest coefficients of reliability ranging from +.45 to +.82, eight

of these (R, W, D, M, F, A, H, At) exceeding a level considered minimally useful (+.70) for individual prediction. Though this is encouraging, similar studies must be carried out in large groups of normal and abnormal subjects paying attention not only to the reliability coefficients but to the internal consistency of the test to determine the stability of the interpretive configurations. Special care must be taken in estimating the effect of impaired mental health on intratest correlation (16, 74).

Comments

Such correlations as have been obtained between characteristics in the Rorschach performance and independent categorizations of the subjects have produced results which warrant further efforts to use the Rorschach Test as an experimental tool as well as a clinical method. Several studies have demonstrated that there is indeed something in the Rorschach which enables one to correlate it with some psychological factors and relate it to some disease entities. However, there are still serious limitations. Considerable refinement and standardization is needed, while the validity and reliability of the test must be more adequately demonstrated.

There is a great need for an experimentally acceptable method of recording personality in order to follow its changes in different disease entities or its response to treatment, as well as for determining whether a certain personality structure is predisposing to the development of a certain disease. Related to the experimental use of the Rorschach Method are the experiments which are being done to broaden the knowledge of perceptual laws by studying the variations in perception in relation to individual personality characteristics, in contrast to the laws which pertain to human perception in general (40).

Summary

The literature describing the use of the Rorschach Method as an experimental instrument has been reviewed and discussed. Many of the studies purporting to demonstrate the test's validity and/or reliability are subject to serious criticism but there is sufficient evidence to suggest that well designed investigations may overcome the present scientific limitations of the Rorschach Method.

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A Validity Study of the Rorschach Prognostic Rating Scale

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In an attack on the problem of predicting outcome of psychotherapy, Klopfer, Kirkner, Wisham and Baker recently developed and published a Rorschach Prognostic Rating Scale (3). The present study was undertaken as a step toward validation of this scale.

The scale is essentially a refinement and further specification of the Rorschach scoring system developed by Klopfer (4, 5). By quantifying previously qualitative features of the response content, the scale promises to reduce the intuitive task of the therapist and to provide more objective information on what can be expected of the patient.

After the record has been scored in the usual way by the Klopfer system, and the form level rating completed, each response is rated for the prognostic scale. The ratings are based upon the manner in which the patient uses movement, shading, and color, as well as the accuracy and definiteness with which he sees his concepts. For example, active movement, freely seen, and involving real people of the immediate cultural milieu, is rated more highly than passive movement, reluctantly given, of culturally distant figures. Weightings of 1 are given to responses of favorable prognostic quality, while ½ or 0 are given less favorable responses and very poor quality responses are given minus ratings. The algebraic sum of the resulting raw weights is converted into a weighted score by means of special tables published with the scale. This procedure is followed for 5 determinant categories: human movement, animal movement, inanimate movement, shading, and color.

The weighted score from these categories, together with the average form level rating, is totalled into a *final prognostic score*. Six prognostic groups were set up, ranging in numerical score value from minus 12 to plus 17, and in meaning from the hopeless case to the most promising.

Psychotic patients or those with severe character disorders are expected to have ratings in the lower groups, while neurotic patients are more likely to be found in the upper groups (3).

The present study has undertaken to test the validity of the Rorschach prognostic scale on a clinically homogeneous population, a group of adult stutterers. This group could be objectively defined in terms of a recognizable outward symptom.

With the population under study, the treatment variable itself had the advantage of relative uniformity, for these patients were treated in the same clinic by a team of therapists working together with a common theoretical approach (9).

Since it is more difficult to predict therapeutic outcome within a single diagnostic group, the task set for the prognostic scale was stringent enough to give real significance to a positive result. A scale which could only predict, for example, that a hysteric would respond better than a chronic schizophrenic would be neither aston-

ishing nor useful, since this can be done readily from the clinical picture. A scale which can predict which hysteric or which stutterer will profit from therapy is much more sensitive and helpful in clinical use.

Experimental Method

Subjects and Procedure

The subjects were stutterers enrolled in the UCLA Psychological and Speech Clinic. They participated in an evening therapy group in addition to receiving individual treatment. The therapy itself was a combined speech therapy and psychotherapy, which included considerable direct work on the stutterer's fears and attitudes toward his stuttering and himself. It is in general a therapy which aims to reduce a stutterer's conflict by working on his anxiety and avoidance in outside speaking situations as well as in group therapy discussions (9). Since the therapy seeks by direct means to increase the stutterer's tolerance for anxiety, it is fairly demanding in terms of ego strength.

Rorschachs were administered to 35 stutterers at the beginning of therapy. Rorschachs after therapy were obtained on 26 of these. Five dropped out early in the therapy and four were unavailable for retest. Six of the 35 were females, a figure close to the usual sex ratio in stuttering. The ages ranged from 17 to 54, though more than half were under 25.

Each Rorschach protocol was scored according to Klopfer and rated according to the prognostic rating scale (3, 4, 5). Those who showed substantial or great improvement were compared with those who showed little or no improvement, while those who continued in therapy were compared with those who dropped.

Reliability Check

To determine their reliability in the use of the prognostic scale, the authors independently scored ratings on two protocols each[1]. Tabulating each response rating, e.g., of each M, FM, and m, which entered into the final prognostic rating, a total of 88% agreement was obtained. Further checks on randomly selected protocols with those participating in the study yielded no percentage of agreement below 71%. The obtained agreements were judged sufficiently high to establish the authors' reliability for purposes of the study.

Therapy Ratings

Two criteria of outcome in therapy were used: (1) those who were rated by the therapists as improving most vs. those rated by the therapists as improving least; (2) those who continued in therapy as against those who dropped.

For the judgments on amount of improvement, we devised a four-step rating scale, and each therapist was asked to rate whether improvement had been (1) great; (2) substantial; (3) slight; (4) none or worse. The main criterion was the amount of personality or psychotherapeutic change. A separate and additional rating was made on the amount of symptomatic or speech improvement.

Three therapists participated, so that three sets of such ratings were obtained. The modal rating was taken as representing the combined judgment, or if each had assigned a different rating, the integer nearest the average was used. Those rated 1 and 2 were combined into one group, Improved Most, and the 3 and 4 into a second group, Improved Least. In other words, those who showed great or substantial

[1] Dr. George Seacat participated in the reliability check.

improvement were compared with those who improved slightly or not at all.

RESULTS AND DISCUSSION

Of the 35 cases tested at the beginning of therapy and given prognostic ratings, 19 were judged to have shown great or substantial improvement along personality dimensions, while 16 were rated as improving slightly or not at all. The mean prognostic score for the Improved Most group was 7.24, while that for the Improved Least was only 4.67. This difference, which is in the predicted direction, yielded a t of 2.86, significant with 33 degrees of freedom at the .01 level. Thus the Rorschach Prognostic Rating Scale did discriminate significantly between the stutterers who improved most in therapy and those who improved least.

Although the distribution of prognostic scores appeared to satisfy requirements for the t test (7), a non-parametric statistic, the "distribution-free test for one-factor experiments (8)," was used as a precautionary measure and to permit direct comparison with other Rorschach variables included in the study. Since this is a less sensitive statistic, the resulting significance level is somewhat lower: $P = .02$. The same statistic was employed on all three movement variables, as well as shading, color, form level, and productivity. These results are summarized in Table I.

The other Rorschach variables were included in the study to determine whether the prediction made by the prognostic scale could as easily be derived from much simpler and more readily available measures. For the determinant categories, 2 through 6 in the table, the means are based on the absolute number of M, FM, m, shading, and color responses, regardless of quality. For form level, the raw datum was the average form level of each case, while productivity figures were based on the response total.

The first two columns of Table I give the means for those in the Most Improved and Least Improved groups, respectively. It can readily be seen that the means for prognostic score and all three movement categories are substantially higher in those who showed most improvement, and that all four are significant at the 2% level. The other categories are non-significant, although color appears to show promise.

The other columns of Table I contain figures related to the calculation of the distribution-free statistic. G.Mdn. is the grand median, or midpoint of the combined

TABLE I—Comparison of "Improved Most" with "Improved Least"

	M_{most}	M_{least}	G. Mdn.	m_{most}	m_{least}	X^2	P
1. Prognostic Score*	7.24	4.67	6.27	13	4	6.37	.02
2. Human Movement	5.10	1.31	2.00	13	4	6.37	.02
3. Animal Movement	5.36	2.62	4.00	13	4	6.37	.02
4. Inanimate Movement	4.16	1.32	1.00	13	4	6.37	.02
5. Shading	4.79	3.44	3.00	10	7	1.56	.30
6. Color	5.89	2.81	3.00	12	5	3.14	.10
7. Form Level	1.05	.94	1.04	11	6	1.28	.30
8. Productivity	35.10	26.44	28.00	11	6	1.28	.30

* The distribution of Prognostic Scores appeared to satisfy requirements for the t-test. With 33 d.f., $t = 2.86$ and $P = .01$.

groups, while m_{most} gives the number of cases in the Improved Most group falling above the grand median, and m_{least} gives the corresponding figures for Improved Least. Employing the formula given by Mood (8), the m_{most} and m_{least} figures were converted into a statistic distributed as chi-square with one degree of freedom. Since there were 35 cases in the study, the grand median is always the 18th case in the ordering of the combined figures, and m_{most} and m_{least} always add up to 17, the total cases above the median.

From the results in Table I it may be concluded that the Rorschach Prognostic Rating Scale did successfully discriminate between those who showed great or substantial improvement in therapy as against those who improved slightly or not at all. It appears, however, that any of the movement factors could do the job equally well, and a great deal more simply.

Since judgments on therapy outcome are sometimes open to question, the 35 cases included in the study were divided a second time, this time on the basis of those who continued in therapy as against those who dropped. When the cases were re-sorted in this manner, 30 fell in a Continued and 5 in a Dropped group. As before, the prognostic scores differed in the predicted direction between the two groups. The *t* with 33 degrees of freedom was 2.87, equivalent to a P of .01. Further comparisons of the Continued and the Dropped are summarized in Table II.

It will be seen that in Table II, as in Table I, the movement variables discriminated almost equally with the prognostic scale between the therapy outcome groups. Since on M and FM, as in prognostic score, none of the Dropped cases appeared above the grand median, the result could not have been more significant for the number of cases included in the groups. In fairness to the prognostic scale, the small number in the Dropped group may have provided a low ceiling, so that with added cases the prognostic score might discriminate better than the movement categories.

Since all of those who dropped were in the Improved Least group, the Dropped are in effect a subcategory of the unimproved. The Continued group contained not only the 19 Improved Most but 11 judged to have improved slightly or not at all. This may help to account for the lower Significance values in Table II as contrasted with Table I. The comparison of those who continued in therapy as against those who dropped out, while admirably objective, is necessarily a rougher type of procedure.

TABLE II—Comparison of "Continued" with "Dropped"

	$M_{cont.}$	M_{drop}	G. Mdn.	$m_{cont.}$	m_{drop}	X^2	P
1. Prognostic Score*	6.58	3.01	6.27	17	0	5.39	.03
2. Human Movement	3.66	.80	2.00	17	0	5.39	.03
3. Animal Movement	4.60	1.20	4.00	17	0	5.39	.03
4. Inanimate Movement	2.50	.80	1.00	16	1	1.85	.20
5. Shading	4.53	2.00	3.00	16	1	1.85	.20
6. Color	4.77	2.80	3.00	16	1	1.85	.20
7. Form Level	1.02	.88	1.04	16	1	1.85	.20
8. Productivity	31.50	29.00	28.00	15	2	.20	.70

* A t-test on the Prognostic Score data yielded 2.87 with 33 d.f., so that P equalled .01.

The P values in Table II are further depressed because of the low N of 5 in the Dropped group. Even though none of the Dropped group was above the Grand median on M, FM, and prognostic score, the chi-square did not quite reach the .02 level. In the comparison of Improved Most with Improved Least, on the other hand, the chi-square easily reached the .02 level even though 4 of the 17 were in the unimproved group.

Since with the figures in the two tables, sixteen significance tests have been run, the question arises as to whether what Cronbach (1) has called an "inflation of probabilities" has taken place. The danger is not great for this reason: initially, the comparison was solely between the prognostic score distributions, with M and m added as a kind of control to see whether these important Rorschach factors also discriminated. At this point only six significance tests had been run, hardly a dangerous inflation (10). When all three turned out to be significant, the others were added to see whether some common factor such as productivity might be operative. Animal movement, shading, color and form level were selected on logical grounds because they constituted the remaining variables on which the prognostic scale was based.

Since the dual partitioning of the cases into Improved Most vs. Improved Least and Continued vs. Dropped was planned from the initiation of the study, this regrouping of the data entailed no danger of augmenting differences after the results were in—another procedure against which Cronbach among others has warned (1).

The use of the scale in this study has led to certain difficulties which relatively small modifications might eliminate. Chief of these is that the meaning of the scale groups I, II, III, etc., is not consistent at different points on the scale. The results just presented support the predictability of the numerical totals on the scale, but the alleged meanings of values at different points on the scale do not lie on a continuum.

The six groups of the scale appear to have conglomerated the following factors: (1) the *amount of help needed* by the individual. For validation purposes, stating the scale values in this way is unsatisfactory. In the present study, for example, the prognostic scores have been compared with the outcome of therapy, without necessity of reference to the assigned meaning. (2) The *chances of help,* i. e., probability of "success" which itself is undefined by the scale. (3) The *amount of improvement expected* is not stated. The central questions involved in a validity study such as the present one are twofold: (a) What amount of improvement can be expected or should be predicted? (b) What are the probabilities of such improvement taking place? These questions could be made consistent in relation to the numerical scale values and would be invaluable to further validation studies. (4) Assertions such as *any treatment will be of some help,* tend to make validation needlessly difficult.

The weighted scores do not appear to add much to the predictive value of the scale. Why not use raw scores, and use appropriate weights on the original rating? Instead of using 0 and ½, the scale might be improved by using whole numbers for the original ratings. These might be chosen in such a way as to eliminate the necessity of separate weighted scores.

Second Rorschachs were obtained on 26 of those who continued in therapy, making pre-therapy vs. post-therapy comparison possible on these cases. The mean prognostic score for the 26 before therapy was 6.51, while that for the same 26 after therapy was somewhat lower at 6.18. Another non-parametric procedure, the sign test (2), on these data yielded 17 shifts downward and 9 upward, with P equal to .25, hence non-significant. Interestingly, productivity showed a concomitant tendency to increase, with 17 shifts upward and 9 downward, resulting in the same level of significance. While these results are inconclusive by themselves, taken together they do suggest that the prognostic score is not simply a function of the response total.

The Improved Most and Improved Least groups presented here were derived from judgments on psychotherapeutic improvement, i. e., along personality dimensions. Similar ratings were obtained using overt speech or symptom improvement. For these symptomatic groups the means on prognostic score scarcely differed, those who improved most in speech being 6.29, and those who improved least in speech being 6.25. Apparently the prognostic rating scale has no predictive value for mere symptom improvement in the clinical group studied.

What the therapist usually seeks, however, is not mere symptomatic improvement, but what he judges to be more effective personality functioning in the patient. For this result, as the findings summarized in Tables I and II relate, the Rorschach Prognostic Rating Scale, along with the movement variables, has demonstrated that it may validly be used to predict the outcome of psychotherapy. The question remaining is whether the prediction may not be made equally well by simpler methods.

Summary

A validity study of the Rorschach Prognostic Rating Scale developed by Klopfer and his co-workers was undertaken with a group of 35 stutterers from the U.C.L.A. Psychological Clinic. The final prognostic scores discriminated significantly between those who showed substantial or great improvement as against those who showed slight or no improvement, and between those who continued in therapy as against those who dropped.

The total number of responses in the human movement, animal movement, and inanimate movement categories appeared to discriminate equally well between these groups. No significant differences appeared between the therapy outcome groups in form level, total color, total shading, or productivity. Second Rorschachs on 26 of the cases showed non-significant tendencies for prognostic score to shift downward and productivity to shift upward following therapy. The scale successfully predicted psychological change but not symptomatic improvement for the group studied.

While certain features of the scale are discussed critically, and the possibility remains that the task of prognosis may be handled equally well by simpler means, the overall results are interpreted as supporting the validity and predictability of the scale.

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Emotional Labels and Projective Test Theory

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Psychologists administering the Thematic Apperception Test ask their subjects to tell stories about the pictures and to describe the feelings and emotions of the characters in the story. Part of the data elicited from subjects, then, consists of sentences labeling the emotions of the story figures. How are these data to be interpreted so as to lead to correct inferences about the subject? This question concerns only a limited part of the interpretive problems posed by TAT protocols, but perhaps an answer to it could clarify the nature of the subject's activity in projective testing. Our approach to this question depends upon an analysis of how subjects assign emotional labels to external objects.

Labels for emotional activity are acquired genetically under conditions which require them to have two kinds of referents. Sometimes the child hears them applied to the overt behavior of another person, as in the sentence, "He is afraid." At other times he hears them applied to his own complex organic state as inferred by parents or peers: "You are afraid." Two quite different kinds of stimulus patterns thus become appropriate conditions for speaking the word "afraid" and its various synonyms.[1]

In the course of such learning, concept formation and generalization probably take place. Finally all that is required for the selection of appropriate words is the presence of some fragment of either the internal or external stimulus patterns. If these fragments or cues can be found in the behavior of animals or in objects and designs, emotional labels may be applied to them also.

Suppose, now, that an adult is required to label some external visual pattern with an emotional word but is free to select any word in that domain. What are the chief determinants of his selection? There appear to be three kinds of variables that must be taken into account: (a) the discriminability of cues arising from his internal state; (b) the discriminability of external visual cues; (c) the strength of motives which would inhibit the production of certain words. If the (b) and (c) variables are weak, then words must be chosen on the basis of internal cues. Should this hypothesis be sustained, we may infer from the emotional labels used in the projective test stories that these labels represent the subject's internal state.

Type (b) variables are presumably weakened in the TAT by using pictures with unclear facial and postural cues. Results obtained by Eron (2) indicate, however, that these cues are probably quite important. This means that labels based on these pictures may not reflect the emotional state of the subjects in any direct way.

Elimination of type (c) variables in projective testing is sought by leading the subject to believe that he is talking about pictures and not about himself. This device undoubtedly weakens motives that selectively inhibit certain labels, but such motives are elicited also by

[1] Some years ago Skinner (6) suggested that words other than those referring to emotion and motivation acquired dual referents.

the social nature of the testing situation. Use of taboo sex words, for example, may be inhibited in the presence of a female examiner.

A number of investigations suggest the correctness of our hypothesis, although they were not dealing with the problem of labeling activity. Murray's (5) early study showed that three frightened children were more likely to use the term "bad" than the term "good" in rating pictures of faces. Zuckerman (8) found some tendency for college students threatened with failure to rate photographed faces higher on "badness." Only one of eight comparisons in his study was statistically significant, however. Leuba and Lucas (3) required hypotized subjects to describe pictures. They found that the moods of the descriptions were in approximate agreement with the moods hypotically induced in their three subjects.

Studies of the projective expression of needs furnish some presumptive evidence for our hypothesis. As one example we may cite the work of McClelland, Clark, Roby, and Atkinson (4) on the expression of need for achievement. Analysis of their published tables indicates that attributing the need for achievement to the characters in the story was the most commonly used descriptive category applied to the characters.

Elizur (1) has developed a method of scoring Rorschach responses for indicators of anxiety and of hostility. Inspection of his scoring system suggests to the present writer that it largely depends upon the use of labels related to the state of the subject. For example, subjects who frequently use the words "hate," "angry," "fighting," or "quarrelsome" would receive a high hostility score.

The present investigation was designed to test the specific hypothesis that, in a projective test situation where motives to inhibit labels selectively are weak, anxious subjects will more often choose labels referring to anxiety than will a non-anxious group. To minimize selective inhibitory motives the task was made impersonal and the labels were supplied by the experimenter. Subjects simply judged the affective character of designs by using one of five labels. Instead of using pictures of people, standard Rorschach blots were used in an effort to decrease the discriminability of the external cues for the labels.

PROCEDURE AND SUBJECTS

We made two separate studies in order to control the anxiety variable in two different ways. In the first, the responses of anxious neurotic men were compared with those of normal men. In the second study, anxiety was temporarily induced in one group of college students, and their responses were compared with those given by a non-anxious control group.

All subjects received the same instructions: "I am going to show you some designs that are supposed to represent certain emotions or feelings. As you look at each one, tell whether it reminds you of fear, anger, happiness or sadness. Just try to get a rapid impression about which of these words fits the design the best. If a design doesn't look like any of these emotions, say 'none'." Each subject had a list of these permitted choices to use in making his judgments. Following the instructions, the Rorschach blots were shown one at a time in the usual order and in the upright position.

Subjects in the Marine groups were seen individually by the experimenter, who showed the cards to them at a distance of three to four feet. They were given as much time as they needed to announce their judgments orally. College students were tested in their class groups. They wrote their responses to Rorschach slides, which were exposed for 30 seconds with a 10 second interval between slides.

Marine Control Group (MC).[2] This group of 50 men was composed of recruits who were seen at routine psychiatric screening a few days after their arrival at a training station. These men ranged from 17 to 32 years in age with a median age of 18 years. The number of school grades they had completed ranged from 6 to 15 with a median of 11 grades.

Marine Anxious Group (MA). This group of 45 men was composed of recruits about to be discharged for neuropsychiatric disability. They were tested during diagnostic interviews usually held from two to six weeks after their arrival at the station. They ranged in age from 17 to 32 years with a median of 22 years. They had completed from three to 14 grades with a median of 9 grades. No psychotics nor feeble-minded cases were included. The diagnoses of these men were made by psychiatrists without consideration of the data reported here. Fifteen of the men were diagnosed as cases of "mixed neurosis." Eleven were classed as "anxiety neurosis." To this latter group we could probably add four cases of "gastric neurosis" and two cases of "effort syndrome." Of the remaining 13, five were enuretics, four were hysterics, and four showed poorly defined, diffuse symptomatology which permitted only the classification of "emotional instability," or "schizoid personality."

College Control Group (CC). This group of 70 students was chosen from a class of 82 who responded to the blots. Twelve records of female subjects were chosen at random and discarded in order to equalize the proportions of the sexes in this group with that in the College Anxious Group. The group then included 49 males and 21 females ranging in age from 18 to 35 years with a median of 21 years. Before they heard the standard instructions they were told that the experiment was to find out something about the designs and that therefore they would not need to put their names on their papers.

College Anxious Group (CA.) This group was composed of 32 students ranging in age from 18 to 42 years with a median of 21 years. The 22 males and 10 females in this group were selected from a class of 60 persons who had all been exposed to anxiety-arousing instructions. To show the basis for selection, we must first report the way in which anxiety was aroused.

The entire class was told that they were going to take a test which had been developed for use in psychological clinics. The special method of scoring, the students were told, would reveal hidden sexual impulses and sexual types such as perverts, homosexuals, and over-sexed people. They were informed that the tests would

[2] Data on men in military service were collected while the writer was on active duty in the U. S. Naval Reserve. Opinions and assertions in this paper are the private ones of the author and are not to be construed as official nor as reflecting the views of the Navy Department or the naval service at large.

be collected, scored, and returned to them with code letters that would reveal their sexual type. It was pointed out that the test was well disguised and that attempts to fake answers would only result in worse ratings. Subjects were then told to write their names at the top of their papers, and the standard directions were given.

Since the instructions were given by the regular teacher of the class, and since the students were in an elementary course in psychology, it seemed likely that the description of the test would be accepted at face value and that anxiety would be aroused. In order to be more certain on this point, however, and to remove the induced tension, the following procedure was used immediately after the responses to the last slide were written: The students were informed that the test was not about sex, that the papers would not be scored as they had been told, and that the real purpose of the experiment was to study their emotional reactions. As proof of sincerity, they were told to tear off the top part of the paper containing their names. They were then asked to write on the back of their papers a paragraph describing their feelings and emotions during the test. They were to tell whether they were tense or relaxed, whether they enjoyed the test, and whether they were anxious about the outcome. Papers were collected after they finished writing this paragraph.

This written material served as a basis for selecting the 32 cases finally included in group CA. The experimenter read the paragraphs prior to tabulating the results and eliminated the papers of those who claimed to be suspicious or angry or who thought the test was silly. The criterion for inclusion in the anxious group was that the subject must mention tension, worry over the outcome, or being upset, even though he claimed that he relaxed after the test began. Here are a few phrases from the anxious group: "I thought, oh, oh," "just a little nervous and not anxious," "tense in stomach muscles," "relaxed but anxious about outcome." The papers that were discarded were largely of two kinds: the suspicious and the matter of fact. Here are samples from discarded papers: "I guessed that the sex part . . . was for effect." "I felt it wasn't worth the paper that I was writing on." "I thought this test was similar to that given in Look Magazine." "I was relaxed, enjoyed the test and was very interested to find out . . . the outcome."

Although the technique for choosing the anxious group is crude, it seems preferable to making the assumption that the misleading description of the test evoked anxiety in all the subjects.

RESULTS

The main results of the two studies can be seen in Table I. The row headed "Fear" is of most interest. The difference of 1.23 between Group MC and Group MA is significant well beyond the one per cent level. The associated value of t is 4.24 with 93 degrees of freedom. The difference of .77 between Group CC and Group CA is also significant beyond the one per cent level. For this difference, t is 2.98 with 100 degrees of freedom. The results clearly justify concluding that the internal states of the subjects influenced the selection of labels referring to their own emotional conditions.

TABLE I—Mean Number of Times Each Label was Used by Each Group

Label	MC	MA	CC	CA
Fear	1.88	3.11	1.64	2.41
Happiness	3.42	2.18	3.18	2.56
Anger	1.54	1.62	1.43	1.50
Sadness	1.26	1.44	1.40	1.37
None	1.90	1.64	2.34	2.15

Partial confirmation of this finding came somewhat unexpectedly from a study of the 28 cases removed from the college experimental group because of suspiciousness or lack of anxiety. Many of these subjects reported that they felt tricked or resented the use of a sexual test in the classroom. These reports suggested computing the frequency with which this group used the label "anger." The mean frequency of their anger judgments, 2.00, is larger than the comparable value for any of the other groups. The difference between the mean of this group and that of 1.50 for Group CA is nearly significant at the five per cent level. The value of t is 1.90 for 58 degrees of freedom. More striking results could probably be obtained by using a method deliberately planned to arouse anger.

We may now consider responses to the individual cards. Table II shows the percentage of subjects in each group that applied the label "fear" to each card. The variation in the size of the percentages probably indicates that the cards differ a good deal in the stimulus cues they provide for this label. Despite this variation, however, the relative incidence of fear responses to each card is about the same in anxious and non-anxious groups. An estimate of this similarity is obtained by computing correlations between the entries in columns MA and MC, and between those

TABLE II—Percentage of Subjects in Each Group Labeling Each Card "Fear"

	Groups			
Cards	MC	MA	CC	CA
I	36	57	54	41
II	26	27	6	12
III	14	18	4	9
IV	26	42	24	56
V	22	29	20	16
VI	22	27	7	16
VII	8	20	3	6
VIII	14	35	30	47
IX	14	31	7	25
X	6	24	9	12

in columns CA and CC in Table II. For the Marine groups r is .76. For the college groups, r is .73. Both values are significantly different from zero at less than the five per cent level with eight degrees of freedom. Thus, although anxious subjects are more likely than control subjects to use the fear label, the relative ease with which any card can elicit that label is about the same for both kinds of subjects.

So far we have limited ourselves by comparing the anxious groups with only their corresponding controls. There are good reasons for this limitation. A direct comparison of the data for Marine groups with those for the corresponding college groups is not warranted, since they differed with respect to method of stimulus presentation, educational level, conditions surrounding the experiment, and probably in degree of anxiety. Differences in the "fear" responses made by group MA and by group CA, for example, could be attributed to any or all of these variables. Using slides may have affected the incidence of fear responses, but in this investigation the amount of the effect is unknown. For our purposes, of course,

differences in the samples and in the mode of presentation do not destroy the conclusions about the effect of anxiety on labeling. Actually, the use of two sets of conditions and two quite different samples provides a cross validation that gives added confidence in the generality of our results. Slight alterations in method of presentation and marked differences in the method for obtaining anxious subjects did not change the essential outcome.

Some interesting information about the characteristics of the blots as stimuli can be found in Table II. Inspection of these data shows that cards I, IV, and VIII are most commonly called "fear," when all groups are considered. These three mark high points in the incidence data for all of the groups. Following each of these points, the incidence of fear responses declines unevenly until the lowest incidence is reached on cards III, VII, and X. Plotting these data would reveal something like a "saw-tooth" curve, defining three sub-sets in the total series of ten cards. The first set is composed of the first three cards, the second comprises cards IV through VII, and the final set is formed by the last three cards. These three sets are distinguished by the fact that each begins at a point of change in the standard sequence of presentation. Card I begins the subject's task. After the red color on II and III, IV introduces a massive black-gray blot. Card VIII is the first of the multi-colored blots. One attractive interpretation of these results is that shifts or discontinuities in the perceptual task of the subjects increase the anxiety level and hence the frequency of fear responses. As subjects adapt to the changed requirements, there is a gradual decrease in anxiety until the next discontinuity appears.

A difficulty with this interpretation is posed by the results for card II. Since it is the first blot to introduce color, it should present a new perceptual task as compared with the first blot. This new task, according to our interpretation, should result in a higher incidence of fear responses than we actually found. Possibly this difficulty can be met in the following way: The presence of color on this blot does not really introduce a shift in the task because it occurs early in the series before subjects have developed any stable anticipatory set. That is, card I may arouse only the anticipation of "more blots" instead of "more achromatic blots." If this happens, then the appearance of the color in card II does not disrupt the set of the subject. The continuation of the color in card III, however, would build an anticipation of "more colored blots." And the reappearance of an achromatic blot in the fourth position would be a discontinuity. Further investigation would be required to test the adequacy of this explanation, and it could well be that the relative incidence of fear responses to the various cards is due largely to their unique features.

To discover whether any of the cards were especially effective in discriminating between anxious and non-anxious groups, the differences in the proportion of fear responses given by anxious and control groups were tested for significance. Of the twenty differences, only four are significant at the five per cent level or better. Group MA responds more often with "fear" to cards VIII and X than does group MC. For groups

CA and CC, cards IV and IX discriminate best. These results do not provide any basis for a generalization about the kinds of stimuli that are likely to discriminate between anxious and non-anxious groups.

Discussion

From the standpoint of projective test theory, the most important finding in this investigation is that the labels assigned the stimuli tended to refer to the emotional state of the subjects. This result is in clear opposition and contrast to a theory that would predict that the labels would be chosen so as to conceal or to explain the inner state of the subjects. That is, our anxious subjects did not increase their use of "happiness," which would have depended upon reaction-formation, nor of "anger," which would have depended upon complementary projection. Presumably this outcome is due to our success in reducing motives that selectively inhibit various labels. We would suggest that considerably more attention needs to be paid to this point in constructing and validating projective tests. What little discussion has appeared on this matter has centered around the effect of the examiner on the subject's productions. Perhaps some of the time spent on attempts at over-all validation could profitably be used in the study of these motives.

Another interesting finding is that although anxiety acts to produce a general decrease in the threshold for the production of the fear labels, this change does not greatly affect the relative potency or cue-value of the external stimuli for eliciting that response. We may paraphrase this formulation by saying that anxious people react to stimulus objects in about the same way as non-anxious people, except that they react more intensely. Such a conclusion is strikingly reinforced by some data on food aversions reported by the writer. In that study (7) it was found that the rank-order correlation between the incidence of aversion to 20 foods among neurotics and the incidence among normals was .75. The pattern of aversions was similar in the two groups; the chief difference between them was in the degree of unpopularity.

These two lines of evidence indicate that, for a given set of test stimuli, the differentiation between more and less anxious subjects must be made on a quantitative basis. The mere presence of words referring to fear and anxiety in a record probably does not permit inferences as to the level of anxiety. Normative data are needed as a base-line for accurate interpretation. We cannot say how far this principle may be generally true, but there is no apparent reason why it should not apply to anger, sadness, or happiness.

Summary

This study tested the hypothesis that in a projective test situation anxious subjects would more often use a label referring to anxiety than would non-anxious subjects. Our theoretical approach suggested that positive results should be obtained if the clarity of the external cues for the label were decreased and if motives that selectively inhibit label production were weak. To achieve these conditions, subjects were given the task of judging the affective character of the Rorschach blots using only five descriptive terms supplied by the experimenter.

Control of the anxiety variables was accomplished in two ways: by using neurotic men in military ser-

vice, and by deliberately arousing anxiety in a group of college students. Non-anxious subjects were used as controls.

The results show that anxious groups applied the label "fear" significantly more often than did the control groups. Subjects used the fear category most often for cards I, IV, and VIII; they used it least often for cards VII and X. When the incidence of fear responses given by the anxious groups to each card is correlated with the incidence in the control groups, coefficients of the order of .70 are obtained.

Our conclusion is that the effect of anxiety is to decrease the threshold for responding with "fear words," but the relative ease with which various stimuli elicit such words is not greatly changed.

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The Clinical Significance and Theory of Sodium Amytal Rorschach Testing

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The purpose of this paper is a clinical evaluation of sodium amytal Rorschach testing of mental patients and normal individuals serving as controls and an integration of these findings with current theoretical concepts.

PREVIOUS STUDIES

Sodium amytal Rorschach testing has proven valuable to the clinical psychologist in obtaining data for psychological diagnosis and personality evaluation from withdrawn and negativistic patients whose routine Rorschach productions had been inconclusive. Kelley and Levine (1) found that diagnosis was aided by both quantitative and qualitative changes in patients' Rorschach responses and that the findings from sodium amytal Rorschach tests were confirmed by clinical diagnoses in a large number of cases. In their conclusion they state: "The responses under sodium amytal medication are qualitatively less bizarre and stereotyped and permit for finer nuances of personality description." Layman (2) in a similar study found significant increases in Beck's Z score of organizing ability, and in the number of responses given in the amytal Rorschachs. Lindeman (3) reports on the use of sodium amytal with 6 normal subjects. Rorschach testing was not done. Lindeman summarizes the following from the introspective reports of these normal subjects (psychology students trained in introspective psychology): "The subjects felt definite changes in their own emotional attitude. Feelings of well-being and serenity, desire to communicate, to be every person's good friend, a grateful appreciation for the kindness and goodness of the persons of their environment, a willingness to speak about very personal problems usually not spoken of to strangers, the conviction that one might do almost everything now, the anticipation of future pleasant activities without any effort to carry out such plans immediately and therefore without any increase in psychomotor activity. There was no distortion of objects; a slight blurring of vision; occasionally double vision; no hallucination, dream-like experiences or apprehensive thoughts; no trace of fright, only the feeling of relief and freedom. The subjects also made marked underestimations of time elapsed."

Noyes (4) describes the effect of 3 to 7 grains of sodium amytal as bringing about a lowered state of consciousness. In this state there is a narcotizing effect on the inhibitory processes causing the release of suppressed and conflictual material. Noyes writes, "Rapport is produced. With his psychotic condition thus temporarily removed, the mental content of the patient can often be obtained."

Zuckerman, Izner and Leiser (5) reported a case in which the sodium amytal Rorschach revealed a schizophrenic process which, due to the patient's underproductivity, could not be detected either clinically or psychologically prior to the use of sodium amytal. Under amytal the patient gave many pathognomonic responses. That the diagnosis of schizophrenia rather than that of a severe psychoneurosis was correct was confirmed by the subsequent clinical course.

TECHNIQUE

The following procedure, as described by Noyes, (4) was followed in the administration of sodium amytal to our subjects. "A freshly prepared 10% solution of sodium amytal is injected at the rate of approximately 1 cc. per minute. The injection is continued until the patient becomes drowsy but care must be taken that he does not become stuporous." Rorschach testing was undertaken immediately after the subject became drowsy and dysarthric.

RESULTS FROM MENTAL PATIENTS

In the process of routine psychological testing of mental patients, data were obtained on 15 patients who had an initial Rorschach test and who were given sodium amytal Rorschachs for evaluation and clarification of clinical diagnosis.

In addition to this group, several patients were given amytal Rorschachs who were not accessible to routine interview and psychological testing. Sodium amytal enabled the examiner in two cases to obtain a Rorschach protocol which yielded sufficient material for psychological evaluation. The other two cases, experiencing acute and severe psychotic regression at the time, did not respond to the amytal.

Of the 15 cases in which both pre- and post-amytal Rorschach records were obtained, 10 had been examined due to the limited protocol obtained in the first Rorschach testing. In all of these cases the number of responses was below 10. In six cases the Rorschach records remained almost identical with the original record in both number and content of responses. All these cases were cooperative in giving the initial record. However, in the four cases which were somewhat negativistic and evasive in their initial Rorschach records, more responses were given and richer content added to the initial record.

The remaining five cases are patients who were fully cooperative and who gave protocols adequate in number of responses and content for psychological evaluation. In these cases the sodium amytal Rorschachs were largely similar to the initial Rorschachs obtained.

DISCUSSION OF RESULTS FROM MENTAL PATIENTS

The evidence we have obtained supports the conclusions drawn from the introspective reports obtained by Lindeman (3). It is observed clinically that under sodium amytal the change that occurs is one of feeling tone and attitude. A positive attitude toward the examiner and the test is created due to a feeling of well-being which enables the patient to reveal information previously blocked as a result of a negative attitude. In these cases, records are obtained which are duplicates of the original record but in which elaborations and new responses are given which enable the examiner to obtain a clearer picture of the personality processes involved. However, there is no one-to-one relationship between underproductivity and negativism on the Rorschach cards. This is borne out by our failure to obtain a significant increase in responses under sodium amytal in some underproductive patients. Sodium amytal testing is therefore most useful when a negative attitude toward the testing can be demonstrated.

Sodium amytal does not serve to alter the personality of the patient in any way other than to free him of inhibitions and repressions. It serves neither to create nor to

remove a psychotic state. This is contrary to the statement of Noyes (4), that it temporarily removes the psychotic state, and to Kelley and Levine's (1) conclusion that responses under sodium amytal are qualitatively less bizarre. Zuckerman, Izner and Leiser's (5) case study clearly contradicts this and our findings in other records reveal that in many cases the pre- and post-amytal records are largely similar. However several patients did give determinants and qualitative responses which revealed the release of resourceful and creative powers not previously elicited. Therefore, it would seem that in some cases the responses obtained are more bizarre and in other cases more resourceful.

Normal Controls

In order to verify some of the hypotheses derived from the sodium amytal records of mental patients with severe neurosis or psychosis, it was decided to apply the amytal technique to a small group of mentally "normal" patients. The readiest source for such a group lay in the general hospital surgical wards where it was believed that psychological determinants in the illness would be at a minimum. To facilitate the screening of these patients, only those patients were selected for testing whom the doctors on the ward considered to be the best adjusted. 15 male patients were given a Rorschach test. Of this total, six patients were selected for further sodium amytal Rorschach testing since they presented a Rorschach picture which fell within non-psychotic and largely normal limits. Of these six patients, four gave records which revealed body anxiety. Three of these records also contained some minimal neurotic features. However, considering that these patients were under sufficient stress, it was evident that not only could they be sharply differentiated from our mentally ill patients but fell within "normal limits". It would appear that they have some emotional problems with which they manage to get along. Two of the records did not contain indications of anxiety and were rather ideal Rorschach pictures.

Results from Normals

The hypothesis that sodium amytal does not create a psychotic state was verified. In only one case, and limited to the initial Rorschach testing, psychotic-like productions were observed in an individual who had given an ideal Rorschach protocol prior to sodium amytal administration. This appeared to be due to a short confusion and disturbance of vision and was perhaps related to a hostile attitude to sodium amytal administration. Of all the patients, this one demonstrated the most active motor behavior under sodium amytal. The remainder of the record was normal and the psychotic-like responses were later rejected by the patient.

If we define a cooperative attitude as one which enables a subject to give a productive and essentially normal Rorschach picture then all of our six subjects were cooperative. However, the presence or absence of negativism can not always be inferred from the number of responses. Three of the six records remained almost identical under sodium amytal, with the exception of one or two responses. The other three records remained substantially similar but showed some changes in content and one essential change in the use of a Rorschach determinant. These were the only notable variations in the Rorschach responses under sodium

amytal and did not alter the content of the personality picture.

These test data seem to confirm our hypothesis that when a cooperative attitude in Rorschach testing is obtained, sodium amytal will not alter the personality picture. The only essential change that sodium amytal seems to produce is the release of cortical inhibitory functions which will allow the individual a more marked responsiveness to inner stimuli (tendency to increase in Rorschach determinants M and FM) and will disclose these stimuli. The associative processes are speeded up as evidenced by the rapid response time and by the tendency of some subjects to combine good percepts in a fabulatory manner. This accounts in large part for the tendency of some individuals to produce one or two poor form responses under amytal which they previously did not give. Finally it seems to confirm our hypothesis that some of the responses obtained under sodium amytal are both primitive and more resourceful.

CONCLUSIONS

The following conclusions were drawn from a pre- and post-sodium amytal Rorschach study of both mental patients and normal individuals.

1. Sodium amytal Rorschach testing is most useful in those cases in which psychological evaluation and diagnosis cannot be made from the initial Rorschach records of negativistic and uncooperative patients.

2. A limited Rorschach protocol is not in itself evidence of negativism and uncooperativeness.

3. Sodium amytal can neither create nor remove a psychotic condition.

4. Sodium amytal may elicit either more bizarre or more resourceful responses, depending upon what is initially obscured in the personality as a result of negativism and suppression.

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BOOK REVIEWS

Allen, Robert M. *Introduction to the Rorschach Technique, Manual of Administration and Scoring.* New York: International Universities Press, 1953, 126 pp.

This volume is a paper bound edition in which the paper is of good quality; the print, even in footnotes, is highly readable; and the general format well planned. The author in the introduction points out carefully that this presentation is specifically planned for the beginner and that its "unique contribution . . . is the detailed presentation." The Manual is divided into three parts, The Theory and Mechanics of the Rorschach Ink Blot Test, the Scoring Symbols of the Rorschach Ink Blot Test, and the Inquiry into Rorschach Concepts.

The first section makes detailed recommendations about the handling of the cards, the seating arrangement, and the recording. The author points out the wisdom of having the subject sit in a position so that the examiner can observe all facial reactions. However, with the position indicated in the drawing, it is difficult to see how such observation can be made.

The Second section goes into a simple explanation of scoring and includes many illustrations of the various scorings. Such illustrations are valuable additions to any beginner's text. On the whole, the author follows Klopfer's modifications of Rorschach except for the use of Rorschach's F plus and F minus. In a footnote (pg. 44) the author comments, "Neutral F is also used by some Rorschach workers in those instances where there is ambivalence between F plus and F minus. This should be kept to a minimum since it solves nothing. To this reviewer it seems as though the author is missing the basic concept in the so called neutral F since, as in all other normally distributed scores, it provides a category for the usual response and thus actually sharpens the meaning of F plus and F minus scores and avoids the arbitrary forcing of responses into two categories. With the two category plan there is no indication from the F minus score whether the minus quality is a negligible one or a serious deviation from the usual response whereas with the three categories the plus or minus following an F is an immediate indication of variance from the usual. In the section on scoring, two minor errors were noted. One is page 39 where the "dx" score is attributed to Klopfer. It should be attributed to Beck. The second is on page 50 where the author reports Klopfer as scoring imposed expressions such as grinning masks as Fm. Actually Klopfer scores an F with an additional m. Where an actual face is seen with such expression the score is M. A more important misinterpretation, on page 68, results from the acceptance of a quotation from Buhler which states, "Scores are listed as main and additional in order of appearance, with the exception of certain signs which have preference over others, e.g. M scores precede all other signs, bright color scores (not C') rank second, FM third, Fc scores fourth. The other signs follow without discrimination. This rule corresponds to Klopfer's present technique." This is a distortion of Klopfer's

statement that when two determinants within the same response seem to be of equal stimulus value, use the above as a rule of thumb. To follow the rule as rigidly as stated must cause distortions. For example, in a response such as two roosters fighting and they have red combs, the color is only an accessory, yet to follow the rule, the color score would come first. Similarly with a well described vista response if a small or tiny detail suggesting a human in movement is included the M would have to be scored first, if the rule is followed.

The third section deals with inquiry, testing the limits, and computations. The author makes an important point in the opening of this section. He points out that "The temptation to pass over commonly produced and popular responses without inquiry may lead to a serious error in scoring and interpretation in addition to poor testing habits." (pg. 81). He then proceeds to suggest techniques for eliciting additional information to round out the examination. In a footnote on page 96 he states that, "the inquiry and Testing the Limits assume an intimate knowledge of the test itself, otherwise the kind of information sought will represent trial-and-error fumbling rather than directed and purposeful questioning." The reviewer agrees with this whole-heartedly but must raise a fundamental question at this point about the many presentations, including the one being reviewed, in which scoring is taught as a blind technique instead of teaching it in integration with basic interpretation. Since inquiry and testing of limits can have little meaning without a knowledge of the meaning of the Rorschach technique in its entirety, the teaching of scoring as a separate item results in the tendency for students to worship scoring as an entity in itself rather than as a shorthand method of recording the responses. It also results in the inefficient process of requiring the student to learn scoring and then to have to re-learn it in association with its meaning.

In general, the book fulfills the author's stated purpose of being a highly simplified presentation, helpful to the beginner when the Manual is used as an adjunct to the teaching situation.

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Harrower, Molly. *Appraising Personality.* The Use of Psychological Tests in the Practice of Medicine, New York: W. W. Norton & Company, 1952, pp. XVII +197.

Dr. Harrower undertakes to describe the functions and the contributions of the clinical psychologist. The book is addressed primarily to those professional groups who, in the course of their work, might make referrals for testing to the clinical psychologist as well as other interested professional workers and laymen. The author takes the approach that anyone in referring patients for testing or making use of test results should be familiar with the tools of the clinical psychologist.

The entire presentation is made by means of a discussion between a clinical psychologist and a physician who is interested in clinical psychology. It is obvious that the physician knows very little about clinical psychology and, therefore, not only the content material but some of the theory and philosophy of testing can also be introduced.

The book is well written and the theme is built up with considerable skill.

The physician is introduced specifically to the following tests: Rorschach, Wechsler-Bellevue, Draw a Person and Draw the Most Unpleasant Thing, the Szondi and the Sentence Completion Test. This is followed by a description of five hypothetical cases referred by the physician. Letters of referral from the physician and reports by the clinical psychologist present the case material. While it is recognized that due to the limitation of space all the important tests could not be discussed and also, individuals would differ greatly in the choice of tests, the reviewer was surprised to find the T.A.T. mentioned only on a list of tests and the M.M.P.I. mentioned not at all.

Essentially, the purpose of the book is to describe the tests to those groups who would be using the services of the clinical psychologist. However, the entire emphasis is placed on the interplay between the psychologist and the medical practitioner. All illustrative cases are cases referred by the physician. It appears to the reviewer that an opportunity was lost to demonstrate how the clinical psychologist could be of service to "social workers, personnel workers, child guidance workers and educators" to mention the groups to whom this book is purportedly addressed.

While the presentation of material is very well done, the author does include some points of view that might not be typical for clinical psychologists. For example, Dr. Harrower implies that the function of the clinical psychologist is to do testing only on referral by physicians (except under most unusual conditions) and also implies that treatment should be left to the psychiatrist. In cases of marital discord, the author feels it is essential to see both partners before a meaningful report can be made.

It is recognized in a book of this type that there would be a tendency to play down the limitations of the tests. While the author takes a realistic approach concerning the limitations of psychologists, she only pays lip service to questioning the validity of the tests themselves. The only test where validity is considered is the Szondi and even this considera ion is minimal. The statement is made, "There is still controversy among psychologists as to its (Szondi test) validity" (p. 115), but later on one reads "persons who dislike the manic faces are, without exception, unhappy and pessimistic in their outlook" (p. 128). The uncritical reader would certainly believe the tests were well-nigh infallible.

The author has her physician raise practically all the usual questions concerning projective techniques (except those referring to validity) put to clinical psychologists. In the reviewer's opinion, she answers these questions skillfully and meaningfully. This is an excellent explanation of and introduction to projective techniques for any professional worker who wants to understand what the clinical psychologist does. It is also well worth reading by any clinical psychologist who is called upon to explain projective techniques to his non-psychologist colleagues.

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James W. Howard, Ph.D. *The Howard Ink Blot Test,* A Descriptive Manual, Journal of Clinical Psychology Monograph Supple-

ment. October 19, 1953. $2.00.

Howard Ink Blots, distributed by Journal of Clinical Psychology. $12.50.

The advertising for the Howard Ink Blot Test, which is extensive, makes statements such as, "The test is derived experimentally;" "It has a wider range of stimulating features;" "There are statistical findings from a 'normal' group," and "It has greater diagnostic sensitivity." Some of these statements will be examined in the review below.

In regard to the question of experimental derivation Howard points out in the manual that he had a large number of ink blots from which the present series have been selected. The data presented in the manual are derived from 229 subjects. He makes the statement, "It is believed that some of these differences (from the Rorschach) may indicate that the test is worthy of the research effort by clinicians or other interested psychologists." This is at some variance with the advertising claim that this research has already been done. Later on in the preface to the manual he states that it would not be possible at this time to give a full description of the administration and scoring of the test and that nothing at all would be said about the interpretation of findings since it was assumed that these could be done by anyone familiar with the Rorschach Test. This is stated in spite of the fact that the author continually emphasizes the point that this test is different from the Rorschach Test and that the cards have a considerably different stimulus value. Why he should, therefore, assume that the principles of interpretation empirically derived from the Rorschach Test should be applicable to this different test is difficult to determine.

During the rest of this very brief manual the author makes a number of other statements which might be thrown into question by the clinical observer. Discussing the derivation of this test, he makes the statement that the Rorschach (when used as a group test) could not furnish sufficient data for appraising or describing the individual personality. He cites no evidence to support this contention. He makes the point that the Howard Ink Blot Test is a better test because it has more ink blots, more color, more movement, et cetera. These features he describes as greater "sensitivity" of the test. The reader is left at a loss to know why these features should make the test more sensitive to the assessment of personality, and it is not clear just exactly what the author means by "sensitivity." There is some reason to believe that the Rorschach Test has been found to be of some use in the assessment of personality. There is no evidence at all that the Howard Ink Blot Test has been able to be of any use in this regard. At least, if there is some evidence, it has not been presented in the material discussed here.

Howard's "statistics" in regard to the "manner of approach" consist of giving the mean and standard deviation of the various location categories for his normal group. This is not very useful to the clinician since it is not expressed in such a way as to be applicable to a record with any number of responses. His subsequent discussion of the various determinants is the practice of group averaging which the author himself admits distorts the individual patterns. If this is the case, what is the particular point in presenting this kind of data? He points out that there are more color and more human movement responses elic-

ited by his blots. It seems to the present reviewer that if this is the case, an entirely new rationale and new method of interpreting these determinants must be found because the interpretative hypotheses derived from the Rorschach Test are quite closely bound up with the stimulus value of the particular blots used in that test. His "new" symbol IF, standing for interior form, bears a striking resemblance to a symbol, di, which was suggested by Klopfer eleven years ago. His list of plus and minus form responses presumably analogous to the list presented by Beck and Hertz are completely unjustifiable in view of the fact that the author has not done any extensive standardization in comparing normal and pathological groups.

In conclusion it is the opinion of the present reviewer that the Howard Ink Blot Test does not appear upon the market place of clinical psychology with sufficient evidence to back up any of the contentions made. No adequate standardization data have been presented. No research concerning validity has been done, and no information has been presented whatsoever about the means that should be used in interpreting the responses to this kind of material. Indeed, under these circumstances, the question might be raised as to the appropriateness of publishing this test at this time for commercial distribution.

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Klopfer, Bruno, Ainsworth, Mary D., Klopfer, Walter G., and Holt, Robert R. *Developments in the Rorschach Technique. Volume 1: Technique and Theory.* Yonkers-on-Hudson, New York: World Book Company, 1954. 726 pp. +x.

Bruno Klopfer's *The Rorschach Technique,* originally issued in 1942 and later supplemented in 1946, was a remarkable book. With a directness, compactness, and lucidity rare among psychological texts, it covered the history, administration, scoring, and interpretation of the Rorschach method so adequately that many Rorschachists have not only used it for a bible during the last decade but have found it to be virtually a self-sufficient text. It is somewhat sad, therefore, particularly for one whose first Rorschach sustenance flowed from this bountiful source, to have, in a sense, to serve as one of its pallbearers. Fortunately, however, this is one funeral from which the corpse is conspicuously absent: for *Developments in the Rorschach Technique,* which is the successor now given us by Dr. Klopfer and his associates to the old Klopfer and Kelley manual, is an even more remarkable work than its remarkable predecessor. It is an excellent job.

Part One—the first 246 pages—of Volume 1 is concerned with administration and scoring. In this section, Dr. Klopfer and his two main collaborators, Walter G. Klopfer and Mary D. Ainsworth, cover the same material covered in Part Two of *The Rorschach Technique* and do so in a distinctly more detailed, better illustrated, and consequently clearer manner. Numerous valuable examples of completely scored responses are given. Form-level ratings, not used in the original text and only partly outlined in the 1946 supplement, are explained in detail and are routinely used as part of the Rorschach scoring. A new content category, AH, representing figures that are part human and part animal, is employed. Otherwise, the origi-

nal Klopfer contributions to Rorschach scoring are left pretty much intact. Whether many oldtime Rorschachists will choose to accept the new form-level ratings, which are far more precise than the F+ and F— ratings widely used by Beck and others but which are also far more cumbersome to ascertain, is questionable. For research purposes, however, they would appear to have a real usefulness. And the concepts behind form-level ratings should furnish some useful insights to many busy clinicians who may not actually employ such ratings in a rigorous manner.

One may always quibble with a scoring system, and certainly that of Dr. Klopfer and his associates is not perfect. Its pertinence and practicality are, as they have always been, noteworthy. Its most vulnerable point is still, perhaps, its rather rigid concepts of popular responses: which in this edition are still rigorously restricted to the same ten as before, and for which no particular statistical supporting evidence is given.

Part Two of Volume 1 of *Developments in the Rorschach Technique* is devoted to interpretation. Here again, the material in the original Klopfer and Kelley volume is expanded in a vital, sensitive manner. In addition, chapters on sequence analysis and content analysis go clearly beyond the 1942 formulations and offer much valuable discussion. An unusual contribution to the chapters on interpretation is the presentation of the analyses in the form of hypotheses rather than statements of dogma. It may unfortunately be predicted that many of the users of this text will, after awhile, quite neglect the hypothetical forms in which the interpretations are consistently stated and come to view them as indubitable statements of fact. The authors themselves tend to do this from time to time, as when they remark, on page 578, that "the hypothesis that FM indicates impulses for immediate need gratification makes it clear that FM is closely associated with the handling of 'stress tolerance.' " A hypothesis, of course, can hardly make anything clear until it is firmly factually validated; and, as yet, the hypothesis that FM indicates impulses for immediate need gratification is hardly in this class. In spite of such lapses as this, the attempt of Dr. Klopfer and his associates to lean over backwards to state their interpretative hypotheses as hypotheses rather than facts is a most healthy sign, and is an immense improvement on many of the more dogmatic formulations of the original text.

Part Three, on theory, is an especially worthwhile section of Volume I of *Developments in the Rorschach Technique*. Mary Ainsworth's chapter on the problems of validation, while something of an apologia for the embarrassing fact that most modern researches have not upheld the validity of many basic Rorschach interpretations, does show how difficult Rorschach validation actually is, and why validity coefficients are often discouragingly low. Robert R. Holt's chapter, "Implications of Some Contemporary Personality Theories for Rorschach Rationale," is easily the best discussion on this topic which has ever appeared in the literature and should be required reading for all clinical psychologists. Bruno Klopfer's chapter on Rorschach hypotheses and ego psychology adds to the usual Freudian interpretative frame of reference for the Rorschach some highly provocative Jungian modifications of ego psychology. The present reviewer, who

heartily agrees with Dr. Holt that much Rorschach interpretative terminology lacks any clear and unambiguous referent in clinical observation, and who has for many years been biased against the thoroughly muddled ego-superego-id terminology of the Freudians, can see only still greater psychological confusion resulting from the addition of the Jungian Self, which is said to be less conscious and less differentiated than the ego. A more operational statement of all the Rorschach hypotheses included in this work, and especially those in Dr. Klopfer's chapter on the Rorschach and ego psychology, might well help clarify considerable semantic-personological confusion.

The final part of *Development in the Rorschach Technique* consists of a chapter on the principles of report writing by Walter Klopfer which is exceptionally incisive and important; a beautifully illustrated case study by Mary Ainsworth; and a potentially useful Rorschach prognostic rating scale devised and exposited by Bruno Klopfer. This final section will be particularly helpful for Rorschach beginners.

All told, this new Rorschach manual is an essentially conservative document that keeps the original Klopfer system of scoring and interpretation fairly intact, but makes some interesting and important additions to it. If anything, it remains a little too diehard and never, except in Dr. Holt's chapter, faces squarely up to the problem of clinical validation although it seriously considers this problem at many points. What it does do is present, in an unusually well-organized, well-delineated, and well-printed manner, the Rorschach-Klopfer system that has always had, and definitely still has, few peers and no superiors. Volume I on *Technique and Theory* may not be the best Rorschach manual that will ever be written, but it will probably be a long time before it is superseded by a better one—except, perhaps, by a later revision of itself. If ever there was a *must* for the personal library of every Rorschacher, this certainly is it.

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Koch, Charles. *The Tree Test: The Tree-Drawing Test as an Aid in Psychodiagnosis.* Berne: Hans Huber, 1953, 88 pp. $4.50.

This is one of those clinical books whose publication is, fortunately, becoming increasingly rare. While Koch may be a sagacious and perceptive clinician and his style of communication adequate to his task, his book represents to this reviewer so much dead wood. Koch refers to a few European students who have worked diagnostically with tree-drawing, calls upon graphologic data for supporting evidence, and launches into 40 pages of drawing characteristics which he has found diagnostic. There is no reference to American work such as the H-T-P, human figure drawing, or experimental findings in drawing or expressive movement.

The sole condescensions to statistics are two trivial tables showing age changes of a few drawing features, expressed in percentages without indications of either the sizes or natures of the samples. No other normative data are presented. However, he promises some in a future publication. While there are a few sample interpretations, they are presented with no evidence of validity, congruent or otherwise. The Rorschach protocols with which the drawings are compared and case history material are both lacking.

While the book may prove to be a useful source of hypotheses to those who wish to do research with the H-T-P, as a contribution to the theory of projective methods or the science of clinical psychology, the book has little to offer.

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Moser, Ulrich. *Psychologie der Arbeitswahl und der Arbeitsstoerungen.* (The Psychology of Vocational Choice and Occupational Disturbances or Disorders) Bern und Stuttgart, (Switzerland and Germany) Hans Huber, 1953. Pp. 183. 21.50 Fr.

This book is unique in that it opens up a whole new vista in the areas of Diagnosis and Therapy of the neuroses, psychoses, and character disorders. The author, who is both a vocational counsellor and an analyst of Zurich, has in this work attempted a synthesis of these two fields. The result is a completely new orientation for vocational guidance, which in the USA has concentrated almost exclusively on aptitudes and intelligence test scores, and also for psychoanalysis which has all too often at home and abroad relied chiefly on the therapeutic affects of the analytic hour to the neglect of environmental factors. Thus, one is inclined to agree with the publisher that "this work fills a need which in the last few years has become intolerable, because it offers a significant and precise Depth Psychology (Tiefen-psychologie) basis for the psychology of work and the psychology of vocational choice . . . a synthesis of the sociological, socio - psychological, psychoanalytical, and schicksalsanalytical factors involved." In this connection one has only to contrast the 1-5 hours weekly consumed in analytic therapy with the 40 to 60 hours weekly spent in the work-a-day world to see the potentialities of work therapy, once the latter is put on a rational and therapeutic basis.

The first section is a didactic discussion of the work concept in relation to motivation, the place of work in the individual economy, and the *milieu* with its multifarious influences and forces. This introductory chapter makes heavy reading, but it is well documented from German, French, and English sources, and it is necessary to establish firmly the concepts and terminology later discussed. This is an unthankful task that every worker in a new field must accomplish.

Next comes a discussion of occupational choice which is from this point onward not so ponderous. The crux of the author's system is the Szondian analysis based upon a series of from 6 to 10 profiles secured by administration of the Szondi test. The author, who is Secretary of the *Kommission fuer Szondi-Triebdiagnostik und Schicksalspsychologie* der SGPA (Swiss Association of Applied Psychology, which is the accrediting agency for Szondi workers on the Continent), sets forth in his work numerous detailed Szondian analyses to illustrate the technique by which one determines the major human drives and the force they exert in the selection of an occupation. There is illustrated, further, how a circumvention of these forces, whether through chance or design, wreaks its havoc in the training for and pursuit of the occupation. One weakness apparent here is the paucity of case illustrations in relation to interpretation and generalization. One finds himself wishing for more examples of the process in operation.

All this preview leads into a detailed description of how work therapy (Arbeitstherapie) functions, e.g. determination of goals, the gradual inclusion of the productivity factor in the work, and the avoidance of pitfalls along the way, with different methods perforce delineated for neurotics, psychotics, and individuals with character disorders.

Next comes the section devoted to vocational disturbances (Arbeitsstoerungen). This section is developed chiefly through a complete portrayal of individual case histories which include background history, diagnostic data (chiefly Szondi protocols with sometimes Rorschach studies and Graphology) and therapeutic procedures. Here should be noted the important role that Graphology assumes in vocational guidance in Europe. This is the strongest chapter in the book and its only weakness is again that there is all too little specific case material. In this chapter the author devotes considerable attention to the neuropathic disorders, and rightly so because of their numerical importance, and the insidious influence they exert on work choice and performance. He concludes with this statement with which many professional workers will agree: "The superego is the secret power which in so many occupational disorders pursues its oblique course and drives so many individuals to an inexplicable vocational failure . . . This failure is compounded sometimes in the parental generation, and sometimes at an even earlier period, and is transmitted through neurotic relationships and training in the family to the offspring."

In the concluding section the author summarizes thus: "In the psychotherapy of work it can well be postulated that the normal man attains fruition through love - vocation - and societal capabilities. Thus, it is in the area of love relationships, a definite occupation, and a particular social group that he attains his life goals." Here we see the philosophical basis of the contemporary psychotherapy in Europe, and particularly in Germany where there is a movement away from Freudian concepts and a harking back to the older philosophers for therapeutic goals. Hegel, Kant, Schopenhauer, and particularly Kant's Transcendentalism. The author reaches the conclusion that when either of the above mentioned elements is missing there occurs a disorder. When the disorder is serious, there must ensue both psychotherapy of an analytic type and proper work therapy. Vocational guidance, he believes, and in this principle the present reviewer concurs, must rest upon an understanding and appreciation of the great human drives, which are truly the mainsprings, not only of man's behavior, but even exert their influence upon the course of his thoughts, ideals, and aspirations.

In format and style the book portrays the typical European conservatism of scientific works. This is to say that it is by no means easy reading. In no sense is accuracy compromised for the sake of a witticism, or a euphemistic phrase. The author is modest in his assumptions and maintains his objectivity rather well.

One is inclined to agree with the publishers that the book is worthwhile reading for vocational counsellors and for psychotherapists.

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Snyder, William U., Chairman. *Group Report of a Program of Research in Psychotherapy.* Pennsylvania State College, 1953, pp. iii +179.

It would be hard to over-state the debt owed to Carl Rogers by all psychologists with any scientific urges who are engaged in psychotherapy. It was his resolution, energy and courage which led him to call for an end to all the current speculation about psychotherapy and to demand subjecting it to the kind of rigorous scrutiny which will build up in time a body of carefully planned and executed research. Rogers was willing, even eager, not just to "stand up and be counted," but rather to sit down and be recorded and coded and classified and rated and judged and analyzed. Not only was he willing to do all this himself, but he imparted his enthusiasm to a large group of students who have carried on the work in their own settings.

The present publication is in a sense a progress report on such a program. It is a group of studies comprising Ph.D. investigations conducted in the Department of Psychology of the Pennsylvania State College under the direction of William U. Snyder. They provide an excellent example of group research or of program design as Marquis has defined it. The operations of the group in planning the researches, arriving at definitions, and working out research techniques illustrate the tirelessness, ingenuity, and devotion required for such investigations. The time-consuming process of recording and transcribing interviews (five or more hours to complete one interview) is further evidence of these same virtues. For the studies reported in this volume, 218 of the 353 recorded interviews were transcribed by the authors themselves. Pre-and post therapy tests administered to the subjects were the Rorschach, the MMPI, and the Mooney Problem Check List. Also, two post-therapy rating scales of symptoms and/or outcome of therapy were devised and employed. Ratings were made by clients (university students), by counselors, and by independent judges.

Of these nine studies, two contribute primarily to what Rogers and his students have called the process type of research; one deals with rapport, or the relationship between client and counselor; two are concerned with measures of personality change during therapy, and four are prediction studies, or attempts to isolate signs that can be used as predictors of the outcome of psychotherapy. It is in two of the predictive studies that Rorschach material was used.

Although many of the original hypotheses were supported by the findings, many were not, and it is quite impossible to identify any bias or defensiveness in the reporting. Of the unsupported hypotheses, it was not found, as had been postulated, that those clients who showed less defensiveness were also the ones who remained in therapy when a group of clients who left was compared with a group who continued. It was not found that the degree of nondirectiveness of therapy was related to successful outcome, nor was the total number of client responses in therapy, nor variability in clients' language in the initial interview. Among the unsupported hypotheses also was Rakusin's, that certain therapy variables (insight, planning, and variability of approach to the problem) would co-vary with an independent estimate of variability, namely the Rorschach. Snyder explains the negative findings in terms of the

homogeneity of the sample studied and of their relatively low degree of maladjustment. But one could raise a question also concerning the rationale behind the measures of Rorschach variability employed which assumed that maximum variability would be represented by one-third of the responses in each of 3 determinant and in each of 3 location categories. Kahn's hypotheses were also not verified — namely, that there would be a positive relationship between Rorschach measures of generality and Rorschach affect indicators, and therapy measures of generality and affect indicators as expressed in the initial interviews.

There are important contributions to technique throughout the studies, the most significant of which is perhaps the multiple criterion for successful outcome of therapy developed by Tucker, a criterion made up of a client rating scale filled out at conclusion of therapy, a counselor check list, filled out at conclusion of therapy both by the counselor and by an independent judge who had read the case, and a ratio between the positive and negative feelings found in the first and last interviews. The term "successful" outcome (without quotes) is used often throughout this group of studies, and at first blush one wonders if his students have forsaken Rogers in his rejection of the term "success" as a useless and misleading criterion. But it is emphasized, especially by Snyder, that this criterion measures changes which can be operationally defined in terms consistent with client-centered method and theory.

Throughout the studies, the writers specify clearly (1) that these findings are relevant only to the process and results of client-centered therapy — a technique which has the advantage of uniformity and clear definitions; and (2) that it is of the utmost importance that similar studies be applied to other types of psychotherapy. Many of the client-centered techniques developed here would be applicable, or at any rate adaptable, to other kinds of psychotherapy, if only comparable enterprise, industry and devotion could be aroused in therapists of other schools of thought and practice.

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GENERAL NEWSLETTER

Siguan, Miguel. Para la interpretacion del T. A. T. *Revista de Psicologia general y aplicada.* 1953, 27, 431-478.

A simple introduction to the T. A. T. involving a description of the pictures and a few sample stories. No bibliography is provided.

Cotte, S., Roux, G., and Aureille, M. A. *Utilisation du Dessin comme Test Psychologique chez Ies Enfants.* Marseille: Comité de L'Enfance Deficiente, 1951. Pp. 82.

This is a knowledgeable presentation of diagnostic findings based on the use of drawings. Children from a variety of cultural and intellectual levels were tested both with drawings and the Rorschach. Many brief case histories are presented with protocols and drawings and observations and interpretations are integrated well with a comprehensive international bibliography.

Ombredane, A. Distinction et mise en place des aspects de la projection. *Rorschachiana,* 1953, 1, 287-306.

The author discusses the concept of projection, distinguishing between psychodynamic and transpositive meanings and among the varied projective values of different projective methods.

Rizzo, C. The Rorschach method in Italy. *Rorschachiana,* 1953, 1. 306-320.

A summary of 57 Italian studies of the Rorschach.

Kuhn, R. Grundlegende statistische und psychologische Aspekte des Rorschachen Formdeutversuches. *Rorschachiana,* 1953, 1, 320-333.

A discussion of the complementary roles of statistical and clinical approaches to Rorschach interpretation.

Friedemann, A. Le test des pyramides en couleurs (Pfister-Heiss). *Rorschachiana,* 1953, 1, 344-359.

Discussion with sample cases of the Color-Pyramid-Test as a part of the diagnostic battery.

The International Rorschach Society announces the broadening of the scope of its journal *Rorschachiana* to include a greater variety of projective test methods, diagnostic problems, and theoretical papers. The journal will now be titled: *Review of Diagnostic and Personality Exploration.*

J. M. Williams of London has prepared the third issue of the *British Rorschach Forum Newsletter* which summarizes papers presented at meetings of the Forum.

Pacheco, Olinda de Assis. O simbolo do movimento na criança. *A Criança Portuguesa,* 1951-52, 11, 129-139.

A comparison of several hundred drawings and Rorschachs of children was made to determine the nature and significance of human and animal movement.

Stern, S. Analyse d'un cas d'un jeune délinquant á l'aide du "Thematic Apperception Test" de Murray. *A Criança Portuguesa,* 1951-52, 11, 209-222.

Interpretation of the T A T stories of a 16 year old delinquent boy.

Klijnhout, A. Szondi-Statistics. *A Criança Portuguesa,* 1951-52, 11, 343-356.

The author discusses and rejects Szondi's drive system and offers a new method of describing profiles.

Bonnet, D. Les tests de phrases a compléter. *Revue de Psychologie appliquée,* 1953, 3, 407-439.

A review of sentence completion tests and findings. 64 references from several countries.

Pichot, P. El "scatter" y su applicacion en psicopatologia. Revista de *Psicologia general aplicada,* 1953, 10, 175-205. (Madrid).

Summary and discussion of American and foreign work in scatter analysis.

Papers presented to the clinical section of the 11th Congrès de L'Association Internationale de Psychotechnique. Paris, July 1953. Published in *Revue de Psychologie Appliquée,* 1953, 3.

Leme-Lopes, J. Les problèmes généraux de la psychologie de l'epilepsie. 170-191.

After summarizing the evidence from personality study and projective examinations of epileptics, the author concludes that there is no evidence that will enable the prediction of the predisposition or course of epilepsy.

Jones, H. G. Psychological factors in epilepsy: a review. 209-227.

A summary of psychological test findings in epilepsy shows no conclusive relationships between epilepsy and other personality variables. The need for systematic hypothetico-deductive research is stressed.

Flament, J. Le facteur E du Test de Szondi chez les épileptiques. 234-236.

A sample of Szondi profiles of 70 epileptics yields a distribution of factor E which does not differ significantly from that of Deri's normal group.

Pichot, P., Perse, J., et Lempèriere, Th. Contribution a l'étude experimentale de la psychologie de l'epilepsie. 250-259.

Summary of a study of epileptics and non-epileptic organics by means of tests of vocabulary, g, perseveration, and the Rorschach.

de Traubenberg, N. R. Rorschach d'enfants et d'adolescents épileptiques. 288-294.

Analysis of Rorschachs of 32 young epileptics.

Dierkens-Dopchie, N., et Dierkens, J. Corrélation entre des données cliniques et certains facteurs du Test du Rorschach. 314-319.

Rorschachs of 152 children with behavior disorders show no relationship between motor activity and Rorschach M responses.

Matchabely, K. et Bertrand, R. Quelques considérations pratiques sur l'application du test moteur de structuration visuelle de Bender en clinique psychiatrique. 326-332.

Signs for differential diagnosis are presented for very small samples of 10 clinical groups.

Osterrieth, P. A. Remarques sur l'interprétation des tests de dessin en psychologie clinique. 338-343.

Difficulties in validation and utilization of drawings are discussed with research suggestions.

Sion, M. Nos premières impressions du Psychodiagnostic Miokinétique du Dr. Mira y Lopez. 346-351.

Brief review and summary of preliminary research findings in diagnostic use of Mira's Myokinetic Test.

Ombredane, A. *(Free U. Brus-*

sels, Belgium.) Distinction et mise en place des aspects de la projection. (Differential aspects of projection.) *Rorschachiana,* 1953, 1, 287-306.

The many different phenomena to which the term "projection" or "projective" have been applied constitute a source of confusion in contemporary psychology. The author suggests an initial dichotomy between psycho-dynamic and "transpositive" aspects of the projective process and then discusses his thesis in terms of the Rorschach and the T.A.T. English summary. —*H. P. David.*

Rizzo, Carlo. *(U. Rome, Italy.)* The Rorschach method in Italy. *Rorschachiana,* 1953, 1, 306-320.

In his discussion of Rorschach developments in post-war Italy the author notes that a Society has been founded and a School established, that the practical application of the test has been extended to manifold areas, and that the Rorschach has not escaped the attention of magazines, movies, and charlatans. An annotated bibliography of 57 pertinent papers, published between September 1949 and August 1952, is included.—*H. P. David.*

Kuhn, Roland. *(Munsterlingen, Thurgau, Switzerland.)* Grundlegende statistische und psychologische Aspekte des Rorschachschen Formdeutversuches. (Fundamental statistical and psychological aspects of the Rorschach test.) *Rorschachiana,* 1953, 1, 320-333.

When interpreting a Rorschach protocol the examiner should be aware not only of the psychological phenomena involved but also of certain statistical interrelationships. The author observes that interpretation of any one Rorschach factor depends both upon the total number of responses and the quality of the separate percepts. He illustrates his thesis by discussing varied qualitative differences in Whole and Movement responses.—*H. P. David.*

Bash, K. W. *(Sudstrasse 120, Zurich, Switzerland.)* Uber die Bestimmung und statistische Verteilung der Introversion und Extratension im Rorschach-Versuch. (The determination and statistical distribution of introversion and extratension on the Rorschach test.) *Rorschachiana,* 1953, 1, 333-343.

A new statistical Rorschach measure, the "Experience Value", designed to express the distribution of movement and color responses in the Experience Balance on a linear scale, is suggested as an indicator of introversion–extra-tension tendencies. Analysis of test protocols of "normal" subjects reflects relatively extratensive trends among men and introversive trends among women. Within the two separate groups there appears to be a bimodal distribution, which is rather consistent with Jung's theory. — *H. P. David.*

Friedemann, A. *(Fischerweg 6, Biel, Switzerland.)* Le test des pyramides en couleurs (Pfister-Heiss), (The Pfister-Heiss Color-Pyramid Test.) *Rorschachiana,* 1953, 1, 344-359.

The administration and interpretation of the color-pyramid test are briefly described and discussed, together with some norms based upon "several thousand" subjects. 8 cases are presented in greater detail with test protocols and interview data. The color-pyramid test is recommended "as an accessory instrument in psychological diagnosis". English summary.—*H. P. David.*

Jung, C. G. *Von den Wurzeln des Bewusstseins. Studien uber den Archetypus.* Psychologische Abhandlungen, Band IX. (From the roots of consciousness. Studies on the archetype. Psychological essays, Vol. IX.) Zurich: Rascher Verlag, 1954.

For this 9th collection of essays Jung has revised and extended 7 papers previously published separately. He considers at length the general concept and basic aspects of the archetype, its relation to the collective unconscious and to the anima. The Mother Archetype and the symbolisms involved in Mass are discussed. Another paper is devoted to a commentary on the visions of Zosimos, an early alchemist. Of particular interest to the study of projective techniques are the 32 reproductions of trees painted by Jung's patients. He offers comments and interpretations, and discourses on the meaning of the tree as a psychological symbol. — *H. P. David.*

News of the Mosaic Test.

"The Lowenfeld Mosaic Test", a book by Dr. Margaret Lowenfeld, will be published this spring in London by W. S. Cowell, Ltd.

Projective Testing in Field Studies.

1. Since June 1953, Dr. Margaret Mead has headed a three person team (including Mr. and Mrs. Theodore Schwartz of the University of Pennsylvania as well as herself) sent out to the Admiralty Islands by the American Museum of Natural History in New York. The villages of Peri and Mbunai on the South Coast of Manus Island are being studied. The Bender-Gestalt, Rorschach, Mosaic Test and TAT are being given. Also, projective work is being done with children through the media of drawings, games, clay and sand. In her early trip to this island in 1928-29 Dr. Mead had collected some projective material (mainly drawings) and this material will be compared with the material obtained from the same subjects 25 years later.

2. During the current year Dr. Rhoda Metraux, an anthropologist, has been making a field study of the village of Molyneux, Montserrat, British West Indies. Dr. Theodora M. Abel spent one month with Dr. Metraux this winter in order to give a battery of projective tests. 65 subjects were given the Pfister Pyramid Test, the Mosaic, the Szondi and the Rorschach.

THE TAT NEWSLETTER

VOL. VIII, No. 2 JUNE, 1954

EDWIN S. SHNEIDMAN, EDITOR
V. A. Neuropsychiatric Hospital
Los Angeles 25, California

This is Issue No. 30. As part of its constant re-evaluation of the various aspects of the *Journal of Projective Techniques,* the Editorial Committee recently reconsidered the role of the *TAT Newsletter,* especially in terms of the consistent pressures for space within the Journal. The decision of the Committee, in which I participated, was to suspend publication of the *TAT NL.* This, then, is the last issue of the *TAT NL.* Several factors went into this decision. The three most important reasons were as follows: The TAT has come of age and the *NL* no longer fulfills its original purposes; there has, of late, been a dearth of news items, reflecting, in part, the first reason, above; and, concomitantly, there is a growing pressure for every page of space within the *Journal of Projective Techniques* (in which the *NL* appears).

The TAT is now a mature technique. The last *TAT NL* bibliography (Vol. VIII, No. 1) indicated that there are almost one thousand references to the TAT and closely allied techniques. The need for a newsletter — characteristic of aborning movements and groups— is simply no longer keenly present. Bob Holt, founder of the *NL,* commented on this recently in response to some general inquiries from Mort Meyer, Executive Editor of the *JPT,* when, in discussing the problem of publication lag, he said: "I do not think that we can any longer hope to provide in one journal everything that someone who uses projective techniques needs to know, nor can we produce one journal that will bring him information of all the different kinds that a member of our Society may want . . . Following the same line of reasoning, I would rather reluctantly suggest that we consider abandoning the TAT newsletter idea entirely . . . It seems to me that the *TAT NL* has about served its purpose, and I question whether the sort of ephemera that have gone into it are worth preserving for posterity in bound volumes . . . When the *TAT NL* joined up with the *JPT* the latter was in a rather different publishing situation from the one that faces it now; as I recall, there was no great surplus of material, and it seemed desirable to try to make the *Journal* as much as possible all things to all members of the Society. Them days is gone forever."

But all is not lost. There are, I hope, two redeeming features on the horizon. The first is that although the *TAT NL* will no longer be published, the *JPT* will, from time to time, publish a General Newsletter in which informal, newsy items about *all* projective techniques will be included. The second is that a TAT bibliography will be published next year, as in the last several years. It will, as a matter of fact, be a kind of bonus bibliography, for Bob Holt and I plan to prepare a comprehensive twenty-year (1935-1955) bibliography of the TAT. Our present plans call for it to be published in one of the issues of the 1955 volume of the *JPT.*

A last word: For this editor, the *TAT NL* has been a most enjoyable experience. I would be remiss if I did not thank all of those who have corresponded with me about thematic matters and all those who have helped in numerous ways. In the words of two rather successful newsletter editors of a former era[1], I have enjoyed being a TATler and I now rather look forward to being a specTATor.

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[1] Steele, Richard, and Addison, Joseph. *The Tatler* (London: 1709-1711) and *The Spectator* (London: 1711-1712).

ANNOUNCEMENTS

SOCIETY FOR PROJECTIVE TECHNIQUES AND RORSCHACH INSTITUTE, INC.

REPORT OF THE AD HOC COMMITTEE TO STUDY AND CONSIDER RECENT ARTICLES ON PROJECTIVE TECHNIQUES IN COLLIER'S MAGAZINE.

The Executive Committee of the Society for Projective Techniques, at its regular meeting April 23, 1954, authorized publication of the following report in the *Journal of Projective Techniques*. This report is a revision of a report proposed at a special meeting of the Executive Committee of the Society on January 29, 1954.

I. DESCRIPTION OF THE FIRST ARTICLE

The December 11, 1953 issue of Collier's magazine, which appeared on newsstands in New York around the first of the month, had on its front cover, the lead "A Test to Help You Figure Out Your Own Personality." On pages 76-80 appeared an article by Gledhill Cameron entitled "Figure Out Your Own Personality." Page 76 contained two empty white squares, approximately 4x4 inches, with the heading "Before you read this article, in the first blank space below, draw a picture of a human figure; then in the second space draw a figure of the opposite sex. Then read on."

Page 77 had the heading "Are you angry at the world, preoccupied with life's physical aspects or afraid to make decisions? A noted psychologist has worked out a test that helps provide the answers." Page 79 had the heading "The spacing of your two drawings, their size, their expressions—all are important," and reproduced four drawings, under each of which are interpretative comments attributed to Karen Machover.

Paragraph five of the article cautions that ". . . only a trained professional is qualified to analyze a drawing fully—to know how one feature can balance or mitigate another, and to know how to interrelate all the features into a full interpretation." It continues, "There are, however, signposts in the drawings which the layman can easily see and understand. If you keep the important limitations in mind, you are ready to try your hand at analyzing the two drawings you made on the facing page."

Some twenty-five paragraphs in the text which followed begin with italicized questions such as, *"Which sex did you draw first,"* which is followed in this instance by the explanation, "Most women usually draw a woman first; a man draws a man. When that rule is broken, it's generally a woman who breaks it—and most often a well-educated woman. Dr. Machover thinks the reason a woman sometimes draws a man first may be her envy of man's dominant role in life. Men who draw a female figure first may be somewhat confused about just which sex is dominant in their own lives." There are analogous interpretative comments after each of the other italicized questions.

II. Initial Action of Executive Committee

At the regularly scheduled meeting of the Executive Committee of the Society for Projective Techniques and Rorschach Institute, Inc., in New York December 4, 1953, Mrs. Machover brought the article to the attention of the Executive Committee, some of whose members were already familiar with it. The minutes of the December 4th meeting report the proceedings regarding this matter as follows:

"Karen Machover brought to the committee her deep concern about an article on the Human Figure Drawing Test as a projective technique appearing in Collier's of December 11th. She gave an account of her dealings with the author, of her unavailing efforts to have changes made in the format of the article and of her consultation with David Vorhaus and her own attorney.

"After full discussion it was decided that it might be desirable for the committee to undertake some responsibility in the matter. The following resolution was proposed by David Vorhaus and adopted by the committee:

> "The problems raised by the publication of the article of December 11th in Collier's were called to the attention of the Executive Committee by Karen Machover and the Executive Committee asked that the President appoint an ad hoc committee to study and consider the matter and report back to the President; and that the President be empowered in his discretion and as he deems fit to act after receiving the recommendation of the committee."

President Kutash appointed to this Ad Hoc Committee, John E. Bell, Zygmunt A. Piotrowski, L. Joseph Stone, Austin B. Wood, and Harry V. McNeill as Chairman.

III. Action of Ad Hoc Committee

The members of the Ad Hoc Committee studied and considered the matter confided to them. They met several times and exchanged extensive correspondence among themselves and with other interested parties.

Mrs. Machover made available to the Committee the following letter which appeared in part in the January 22nd issue of Collier's. Italicized portions were omitted in the version of the letter printed in the magazine.

December 5, 1953

Editor
Collier's

Dear Sir:

I should like to express my disappointment with your handling of the article "Figure Out Your Own Personality" *published in your* December 11th *issue.*

The reading public has received a wrong impression *because of the format, titling, and "gimmicks" employed by the publisher in the presentation of the article.* When Gledhill Cameron, the author *of the article,* solicited my consultation, I acceded in the hope that a sober popularization might serve to enlighten the general public with some of the methods and means used in personality analysis. *When some weeks before publication, I received some intimation, quite by chance, of the lay-out planned, I protested vigorously, but to no avail.* It is unfortunate, and a matter of deep chagrin, that when a psychologist attempts in good faith to cooperate in an effort to contribute to public enlightenment, the results should be dangerous to the public, an affront to professional standards, and a frivolous disregard of the psychologist's professional reputation.

Your instructions to the reader to analyze his own drawings served only to confuse him. *They ran contrary to the cautious warning contained in the text to the effect that drawings can only be analyzed by a competent and fully trained clinician; furthermore, that they are most often used as only one of a battery of projective personality tests.*

I have received numerous letters from readers who have asked me to undertake to analyze their drawings or to discuss their drawings or to discuss their problems by mail. This is the exact point that

I made in my objections to your editors prior to publication, to wit, that the public will gain the false impression that merely by making a drawing and reading the article they would be in a position to either analyze themselves or their friends, or have someone in my position analyze it for them by mail.

Actually, the fear that I expressed when I informed your magazine of the dangers involved, has become a reality. Some readers who may have cause to feel emotionally disturbed are attempting, following the encouragement of the article, to use this method by themselves, and so may be deterred from seeking such psychological help as they may need.

I trust that the printing of this letter will make it perfectly clear to your readers that my cooperation was predicated on the expectation that the intent of the article would be merely to discuss an interesting phase of personality analysis. *This method is not to be used by them since it is impossible for any individual who is not trained and who is not in the position to conduct a full personality investigation to arrive at any scientific conclusion by merely applying some of the basic rules governing the interpretation of human figure drawings.*

I wish to thank you for this opportunity, since there is no other means for me as a psychologist to reach the readers who might make the mistake against which I had warned you.

Sincerely yours,
KAREN MACHOVER
Senior Psychologist,
Kings County Psychiatric Hospital

The Committee recommended that the following letter be dispatched by the President of the Society to the Editor of Collier's for publication in the magazine:

Office of the Editor
Collier's Magazine
640 Fifth Avenue
New York 19, New York

Gentlemen:

The article "Figure Out Your Own Personality" (Collier's December 11th) describes one of a considerable number of projective techniques used by psychologists to detect personality traits. As President of the Society for Projective Techniques, I am writing you to correct certain erroneous impressions that may be created by your article.

In regular use, the Draw-a-Human-Figure Test and all other projective techniques are not self-administered or self-interpreted. Much training, psychological experience, and knowledge of personality theory are necessary in order to use these techniques in a meaningful way. The test in question is normally given in combination with a number of other tests, and the interpretation, is usually made in the light of information about the subject from other sources. Your readers who try to figure out their own personalities may be disappointed unless they realize that they will need considerably more discernment than is acquired by reading one article and considerably more objectivity than is usually shown in attempts at self-analysis. It is no more appropriate for the amateur to draw his own conclusions from such material than it would be for him to attempt to read his own X-rays.

Sincerely yours,
SAMUEL B. KUTASH, PH.D.,
President, Society for Projective Techniques and Rorschach Institute, Inc.

The above letter of President Kutash was mailed on December 22, 1953. It was, however, not published in Collier's.

The following letter, dated January 5, 1954, was received in reply:

Dr. Samuel B. Kutash
President, Society for Projective Techniques and Rorschach Institute, Inc.
3 Park Road
Maplewood, New Jersey

Dear Dr. Kutash:

Thank you for your letter referring to the article "Figure Out Your Own Personality."

Your interest is appreciated, and your letter has been passed along to the editors concerned. It is regrettable that any misunderstanding should arise regarding the intent and the purpose of the magazine. A letter from Dr. Machover appears in the mail column in our January 22nd issue.

Sincerely yours,
s/WM. JACKMAN,
Collier's

IV. Description of the Second Article

Shortly after the above reply was received, the January 22nd issue of Collier's appeared. On page 44 began an article entitled, "Does Your Child Paint Like This?" Four samples of fingerpainting appeared on this page and the next, together with brief analyses attributed to "psychology experts." A typical analysis was, "Experts to whom Collier's took the fingerpaintings said this one had been done by a boy of 7 or 8 with paranoid tendencies. Some experts identify blue with males, red and yellow with females. They agreed line pattern showed aggressiveness."

The subtitle of the article read, "Children love fingerpainting because it's like making mud pies. It may also reveal their personality problems to psychology experts, a group of whom analyzed these paintings for Collier's. To meet the artists, turn to the next page."

The next page contained photographs of two chimpanzees of the Baltimore Zoo, which were identified as having produced the paintings on the preceding pages. The text explained, "When it was discovered that the painters were a pair of precocious chimps at the Baltimore Zoo, an intriguing possibility arose: Would fingerpainting experts be fooled? The experts were, which discredits neither experts nor fingerpainting, but certainly establishes the chimps as skillful simians." The rest of the text is immaterial to our concern.

V. Further Action of the Ad Hoc Committee

President Kutash referred this second Collier's article to the Ad Hoc Committee for study and consideration. The Committee recommended that the following letter be sent to Mr. Roger Dakin, Editor of Collier's:

January 27, 1954

Mr. Roger Dakin
Editor
Collier's Magazine
640 Fifth Avenue
New York 19, New York

Dear Mr. Dakin:

It is indeed regrettable to find that articles in two issues of Collier's, six weeks apart, give offense to clinical psychologists concerned with projective techniques for the testing of personality traits. Your article of December 11, "Figure Out Your Own Personality," published a necessarily incomplete account of principles for the analysis of personality, which type of popular publication is contrary to the ethical code of professional psychologists, and explicitly invited the self-administration and self-interpretation of the Draw-a-Human-Figure Test by the inexperienced reader. Your reply to our letter of protest regarding that article states that "it is regrettable that any misunderstanding should arise regarding the intent and purpose of the magazine."

The issue of January 22 with the article, "Does Your Child Paint Like This?" indeed raises serious question regarding precisely the "intent and purpose of the magazine." Once again, you make use of a projective technique, this time, fingerpainting, which, properly employed by competent psychologists, reveals much insight into the personality workings of otherwise inaccessible subjects.

You allege that the fingerpaintings of chimpanzees were submitted to experts, and protest that their analyses of this material, fraudulently submitted to them as the products of children, does no discredit to these experts. Are you quite sure? You spared them embarrassment by omitting their names. Have you contacted them to inquire how they feel about the trick that you played on them?

We would like to accept the legitimacy of the "intent and purpose" of Collier's, and find it hard to believe that you pretend to know better than professional psychologists how to use psychological tech-

niques. We likewise find it hard to believe alternatively that you have embarked on a delinquent policy of purloining parts of the professional armamentarium of psychologists and utilizing them for the disadvantage of the public and to the ridicule of the psychological profession.

If you are convinced that the popularization of features of contemporary psychological science and practice is a desirable field for Collier's to exploit, there are legitimate ways of collaborating with psychological experts on the matter. This Society, or the American Psychological Association, would be happy to furnish consultants for popularization purposes which they recognize as sound.

We trust that you will desist from the ill-conceived type of article of which we have two unwholesome examples. They do a disservice to your readers and discredit a profession dedicated to service of the public.

Sincerely yours,
s/SAMUEL B. KUTASH, PH.D.
President

The following reply, dated March 4, 1954, was received from the Editor of Collier's:

Dear Dr. Kutash:

Thank you for your corrective letter. Talking with other members of the staff about your point, and doing a great deal of thinking about it myself, I've come to feel that it was very well taken.

The intent and purpose of the December 11 article, Figure Our Your Own Personality, was serious and well meant—but I will agree that it was fouled up in presentation.

The January 22 article, Does Your Child Paint Like This? was frankly a joke — there's no doubt that such finger painting by a monkey would amuse, and did amuse, a lot of people. But the next step, carrying the painting to experts for analysis, was perhaps going too far. Certainly we did not mean to discredit these experts. Nor did we think it would discredit them. But your question, "Are you sure?" struck home. Before we acted we should have consulted your society or, as you suggest, the American Psychological Association.

I am embarrassed by two in a row, and certainly this is not the kind of a letter any editor likes to write, but nevertheless, I am grateful to you for the spanking, and for the firm yet friendly tone of your letter. I hope you will never again have cause to write a similar one to us.

Very truly yours,
s/ROGER DAKIN

VI. CONCLUSIONS OF THE AD HOC COMMITTEE

The Committee is gratified by the direct and thoughtful letter from the Editor of Collier's, Roger Dakin. The Committee welcomes his sincere expression of regret and his magnanimous recognition of the desirability of consultation with professional societies in connection with the publication of popular psychological articles.

The Committee continues to deplore the publication in a popular magazine of principles of interpretation of projective material and illustrative examples, in that such material necessarily invites self-application and self-interpretation by inexperienced readers. In addition, such material, inadequately presented, may hold the profession up to ridicule.

The members of the Ad Hoc Committee profited greatly from their experience in dealing with the mandate from the Executive Committee. They became aware of numerous problems in the popularization of projective techniques beyond those previously recognized. Therefore, the Committee welcomes a recent decision of the Executive Committee to take steps to establish policies which, when adopted by the Society, will guide the participation of its members in the publication of popular treatments of projective techniques.

JOHN E. BELL, ED.D.
ZYGMUNT A. PIOTROWSKI, PH.D.
L. JOSEPH STONE, PH.D.
AUSTIN B. WOOD, PH.D.,
HARRY V. MCNEILL, PH.D.,
Chairman

REGIONAL REPORTS

Montreal Group

Report for the academic year October 1953 to June 1954.

In keeping with the Society's aims, the Montreal Group has been active in collaborating with other psychological organizations in the district. Papers by members co-sponsored by the Group and by the Provincial and Dominion psychological associations are listed below. This year, the Group followed a program policy of obtaining outside speakers who might offer the stimulus of new avenues of interest particularly since the Group has been, in the past, largely a local interest group, with papers being presented by members themselves.

The opening meeting in collaboration with the Psychological Association of the Province of Quebec (PAPQ) brought a wide favorable response. It was both a pleasure and an honor to have John E. Bell, Ed.D., our Past-President, present two papers at the University of Montreal on December 27, 1953:

Family Group Therapy: A new method of treatment for older children and their parents.

The Nature of Projective Techniques.

During the year four other meetings were held with presentations as follows:

Wolfgang Luthe, M.D., assistant professor of psychology, University of Montreal, Electroscriptography: A new device for analysis of handwriting (January)

Alastair McLeod, M.D., assistant director, Mental Hygiene Institute, Montreal, Symbolic Thought Function: Maturational aspects as measured by prejective techniques (February)

J. S. Bois, Ph.D., Bois and Howard, Professional Psychologists, Montreal, Circularity (General Semantics) and Projective Technique (March)

Wolfgang Luthe, M.D., Handwriting Analysis (April) Discussant, Gustave Morf, M.D., Ph.D., senior psychiatrist, Verdun Protestant Hospital.

The first of these meetings was held at Queen Mary Veterans Hospital, Montreal, the others at the Applied Psychology Centre of McGill University.

No meeting was held in May but the Montreal Group will be presenting a symposium at the Annual Meeting of the Canadian Psychological Association (C.P.A.) participants are to be as follows:

"Developments in Projective Technique"

Blossom T. Wignor, Ph.D., Chairman

Heinz E. Lehmann, M.D. — Modifications of the Rorschach Test

Fern J. Cramer, M.A. — A Review of Some New Apperception Techniques

Gustave Morf, M.D., Ph.D. — The Theoretical Basis of the Szondi Test

Herbert Dörken, Jr., Ph.D. — The Mosaic Test

S. Gerald Shane, M.A.—Graphic Projective Techniques

In addition, Gabrielle Clerk, Ph.D. will be presenting a separate paper:

The Teaching of Projective Techniques

The total membership this year was 45, 19 being members of the parent society and representing the majority of the Canadian membership in the Society for Projective Techniques. The newly elected executive consists of: S. Gerald

Shane, M.A., Chairman; Barbara Allen, M.A., Secretary-Treasurer; Gabrielle Clerk, Ph.D., Herbert Dörken, Jr., Ph.D., Blossom T. Wigdor, Ph.D. Membership and Program Committee.

Resident Canadian membership is now 30 compared to 17 at the time of the December 1952 directory. A number of applications are in process and the Montreal Group is continuing to encourage qualified psychologists and psychiatrists to join the Society.

HERBERT DÖRKEN, JR., PH.D.
Representative for Canada

WORKSHOP

The 1954 Annual Workshop in Projective Drawings will be conducted at New York State Psychiatric Institute by Emanuel F. Hammer and Selma Landisberg, on July 19-22d, from 9:30-12:00 and 1:30-3:30 daily. The workshop will provide a grounding in fundamentals and then go on to advanced considerations of differential diagnosis, psychodynamic appraisal, anxiety, and the individual's psychological resources as treatment potentials. The use of projective drawings in therapy will also be discussed. In addition to Buck's H-T-P technique and Machover's Draw-A-Person Test, the workshop will include the Draw-A-Family procedure, Harrower's Unpleasant Concept Test, Kinget's Drawing Completion Test, the Draw-A-Person-in-the-Rain modification of Abrams which attempts to elicit clues to the self-concept under conditions of environmental stress, Schwartz's Draw-An-Animal concept useful for disclosing the biological side of the bio-social coin, Calligor's Eight-Card Drawing Test which digs down into the deepest layers of the subject's psychosexual identification, and free doodles. For information as to admission, fees or requirements, write to Dr. Hammer, 210 Riverside Drive, New York 25, N. Y. Enrollment arrangements must be completed by July 9th.